10¢ A COPY

The OIL WEEKLY

July 30, 1926 Volume 42. No. 6

Announcing

HYCHROME
GUARANTEED

the DRILLING BIT
with the Guaranteed Pin

See Pages 70-71

HIGHEST QUALITY

ACME

DRILLING AND FISHING TOOLS

Would you go some extra miles for the right fishing tools?

Practically all drillers, drilling contractors and superintendents who have been successful for a considerable time have learned that eliminating the risks increases their gain. Yet even to many of these experienced men it may never have occurred that they should eliminate risky fishing tools with the same caution as they would damaged casing.

The highest quality of steel, the most modern methods of fabricating steel, and the most approved designs of shaping steel are given the first and final consideration in manufacturing Acme Fishing Tools. Even with every care we can exercise we cannot turn out PERFECT implements. They are, however, as nearly perfect as our 25 years experience and modern plant facilities can possibly make them.

When a tool, representing the highest quality we can secure, is made and put in an Acme dealer's stock it is there to be rented but it may be sold instead. We never know.

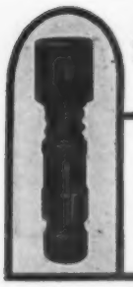
We make them to rent. And to rent as long as possible. When you buy an Acme Fishing Tool you may be sure it was made primarily for our ownership, and there is a heap of satisfaction in this fact.

Three Chief ACME Characteristics

Quality — *of the best; the result of 25 years of Fishing Tool designing, manufacturing and actual operation testing.*

Service — *Complete Stocks; Accessibly Located with competent wide awake distributors with whom doing business is a pleasure.*

Value — *Unexcelled on account of economical manufacturing and fair prices scientifically based on the average length of tool life.*



ACME FISHING TOOL CO.

Parkersburg, West Virginia.

Export Office: 136 Liberty St., New York City, N.Y.

Warehouses and Distributors:

Midland Iron Works—Billings, Montana.
Great Northern Tool and Supply Co.—Kevin, Montana.
Acme Rental Tool Service Co.—Graham, Texas.
Acme Tool Company, Albany, Texas.
Acme Fishing Tool Co. of Texas—Vernon, Texas.
Acme Tool Company—Cross Plains, Texas.
Acme Tool Company—McCamey, Texas.
Acme Fishing Tool Co.—Tulsa, Oklahoma.
Acme Fishing Tool Co.—Okmulgee, Oklahoma.
Logan Foundry and Machine Co.—Logan, Ohio.
Elms Bros. & Co.—Waynesburg, Pa.

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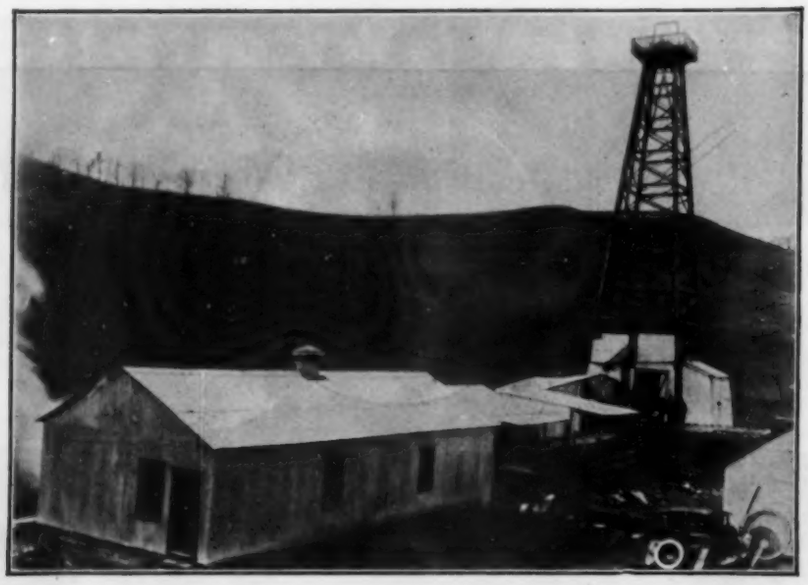
1200
Sacks of Cement
4240 Feet of 8¼-in. 32-lb. Casing
CEMENTING TIME:
1 Hour, 28 Minutes
Fifty-eight minutes after the pumps were started on this job they were shut down. Thirty minutes more were consumed in making the change and landing plug. Total Time: 1 hour, 28 minutes.
Since speed is the essence of safety in scientific oil well cementing, this instance [a typical one] is simply another indication of why the Halliburton method is the fastest, safest and most widely used in the world.
HALLIBURTON
OIL WELL CEMENTING CO.
Duncan, Oklahoma



Deep Well Being Drilled by Reserve Gas Company

THIS well is known as Well No. 918 located in Harrison District, West Virginia, between West Milford and Good Hope on Smith Farm.

It was started in December, 1924. The well when completed is expected to be the deepest in the world. Special equipment is being used. The rig is of hard wood, including the Bull Wheel Shaft, which has two brakes of extra heavy type and which will accommodate four tug ropes. The power equipment is composed of three 30 H. P. Boilers, and one 14 x 14 steam engine. A 7/8" 6 x 19 Special "Wickwire" rope was used to a depth of approximately 6300 feet, a 5½" x 38' stem being used. They then installed a 10,000 ft. Special "Wickwire" rope, the upper 5000 ft. section being 1-inch diameter. The splice was made at the well by their own employees.

Following is the data in connection with drilling this well, to and including January 19, 1926:

The first string of casing is of 20" diameter, placed at a depth of 110 ft. to shut off fresh water. This casing was cemented in. This was followed by 1009 ft. 15½"—1356 ft. 12½"—2962 ft. 10"—5043 ft. 8" to take care of water caves and gas.

The drilling proceeded without trouble to a depth of 6734 feet, gas being found in the Salt, Injun, Fifty-foot, Fifth and Speechly sands, the volume of which from the last three mentioned sands having an open flow of 700,000 cubic feet, which was Braden headed and turned into the line.

On September 3rd, while drilling at 6734 feet, a pocket of gas was encountered which blew the tools up the hole, broke the wire line, leaving tools and 25 feet of line in the hole. This was fished out without difficulty. On September 9th, at 6754 feet, another pocket of gas was found, which blew the tools up the hole, broke the wire line and left tools and some wire line in the hole, causing a fishing job for six weeks. The tools were found 200 feet off bottom, and in attempting to drill by to take hold the tools dropped to within 30 feet of bottom. The tools were finally fished out and found in fairly good condition. At 6775 feet, another pocket of gas blew the tools up the hole but did not break the wire line nor stick the tools.

It was decided to run the 6⅝" casing in the first hard spot encountered which happened to be a Black Lime at 6824 feet, and since November 13th, they have been running this casing, proceeding slowly and carefully. This 6⅝" casing is in the following sections:

2566 ft. 8 inch of 36 lb. screw pipe
1981 ft. 3 inch of 28 lb. screw pipe
10 ft. 3 inch of part screw and part welded pipe
1808 ft. 2 inch of 41 lb. welded pipe
461 ft. of 45 lb. welded pipe

The entire string of 6⅝" casing is more than one mile in length and weighs 120 tons. The screw pipe is on the bottom and the welded pipe on the top. The casing when first run parted 250 feet from the top, after it was set on the bottom. They are now re-running this casing.

WICKWIRE SPENCER STEEL COMPANY
41 East Forty-second Street NEW YORK CITY

DISTRIBUTORS:

EASTERN OIL FIELDS:
Slicker Pipe & Tool Co., Knox, Pa.
A. F. Keck Co., Butler, Pa.
L. J. Cummins, Oil City, Pa.
Lloyd Smith Co., Bradford, Pa.
McDonnell Brannen Co., Boliver, N. Y.
H. B. Mitchell Co., Emlenton Pa.
J. S. Young, Jr., Lawrenceville, Ill.
C. A. Blair & Sons, Clintonville, Pa.
New Martinsville Supply Co., New Martinsville, W. Va.
Elms Brothers, Waynesburg, Pa.
Penn Pipe & Supply Co., Sheffield, Pa.
Leidecker Tool Co., Marietta, Ohio.
Wooster Tool & Supply Co., Wooster, O.
Diamond Supply Co., Charleston, W. Va.
Lawrenceville Machine Co., Lawrenceville, Ill.

MID-CONTINENT OIL FIELDS:
Murray Tool & Supply Co., Tulsa-Cleveland, Okla.
Federal Supply & Machine Co., Augusta-Winfield, Kansas.
Atlas Supply Co., Fort Worth-Vernon-Panhandle, Texas.
Norvell-Wilder Hardware Co., Beaumont-Houston, Texas, and Shreveport, Louisiana.

ROCKY MOUNTAIN OIL FIELDS:
Great Nort[illegible]n Tool & Supply Co., Kevi[illegible]ontana.
Midland Iron Works, Billings, Montana.
Leidecker Tool Co., Casper, Wyoming.

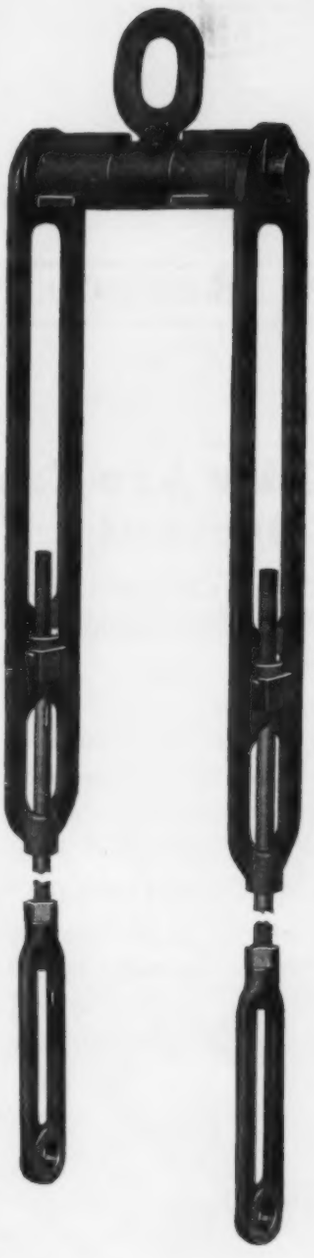
CALIFORNIA OIL FIELDS:
Geo. J. Hausen, Inc., Los Angeles-Taft-Wilmington, Calif.

WICKWIRE SPENCER STEEL

WICKWIRE SPENCER PRODUCTS

Say you saw it in The OIL WEEKLY

The "SARGENT" Heavy Adjuster ROD BEAM HANGER



Designed to eliminate wear and vibration and to give satisfactory service under the most severe working conditions.

Built exceptionally strong so as to give satisfactory service under the most severe pumping conditions. Hundreds of these hangers have been in constant use on deep wells throughout various fields over a period of years without one cent being expended for repairs. It has two 3-inch bearings on top of the walking beam, and a lifting eye, fitted with a 3-inch finished shaft. The heavy hanger links are fastened on each end of this shaft by a patent locking device. The adjuster rods are threaded with left hand threads at the top and right hand threads at the bottom, thereby serving as turn buckels and permitting one man to space the plunger in the pump in just a few minutes, which is frequently done without shutting down.

Sargent Hangers are built for high efficiency in hard service and will quickly pay for themselves.

THE SARGENT ENGINEERING CORPORATION
Huntington Park, (P. O. Box 95) California.

Plant: 2533 E. 56th St., Los Angeles, California.

Branch: 214 W. 1st St. Tulsa, Oklahoma

Casper Supply Co., Casper, Wyoming.

The Sargent Engineering Corp. El Dorado, Arkansas.

R. J. Miller Co., Houston, Texas.

FASTER—EASIER

LEIDECKER

STRAIGHTER

DRILLING TOOLS DESIGNED

RIGHT WILL DRILL MORE

Patent Allowed.
Other Patents Pending.

Spiral Bits Are Easily Dressed

A FEW strokes of the ram and a few blows of the sledges and the Spiral Bit is again ready to make hole.

The Dressing Form makes an easy operation of the dressing of Spiral Bits. The ramming spreads sufficient steel into the points and maintains the concave form which is essential to their superior performance.

Footage of hole in terms of physical work expended points with special favor to Leidecker Spiral Bits. This may explain why Drillers and Tool-Dressers are calling for this improved tool.

Illustrating the process of dressing Leidecker Spiral Bits.

Order thru your supply store

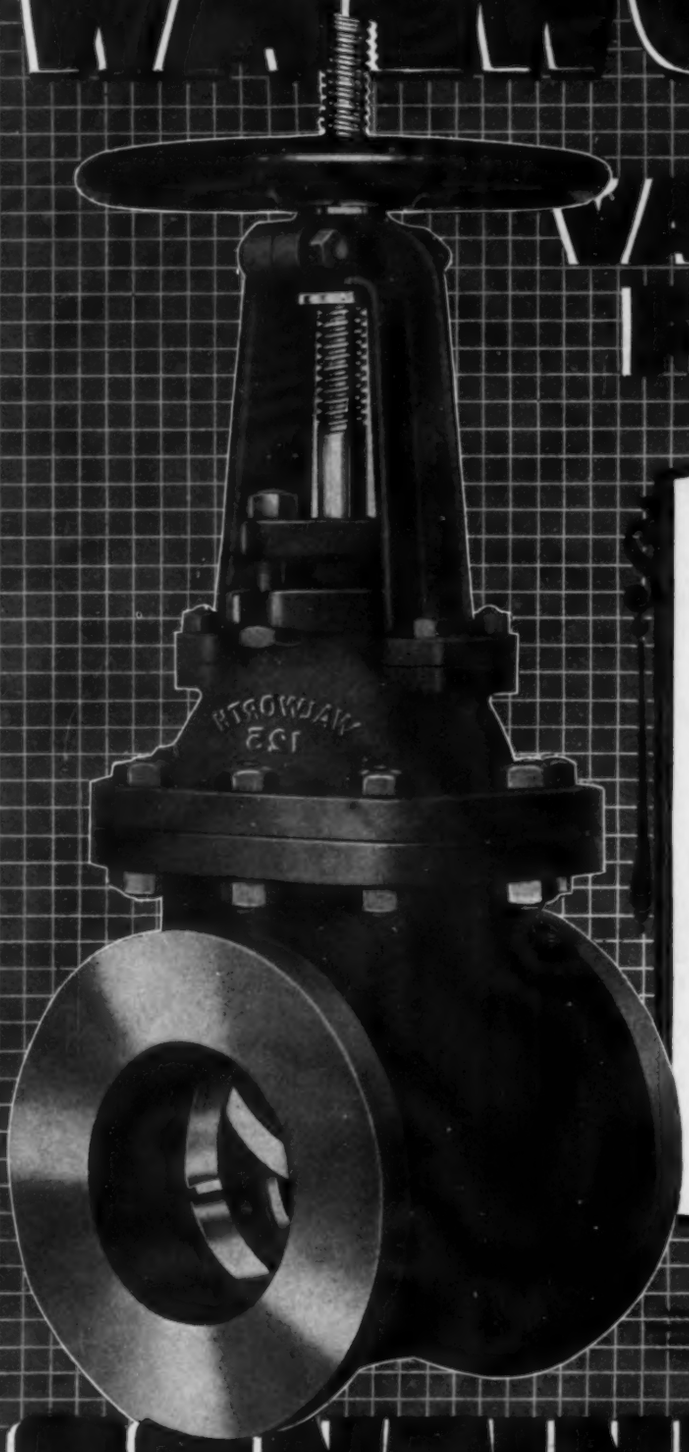
The LEIDECKER TOOL COMPANY
MARIETTA, OHIO

Export Office, 90 West St., New York City.
BRANCHES: Casper and Basin, Wyoming and Bartlesville, Okla.
Spiral Drilling Tool Company, 329 E. Fourth St., Tulsa, Oklahoma, Phone 3-1050

Say you saw it in The OIL WEEKLY

WALWORTH

VALVES AND FITTINGS



The Walworth Company have specialized in the making of all kinds of valves and fittings for many years, and are today among the world-leaders in their field. We carry in stock at all times a comprehensive line of Walworth Valves, Unions, Flanges and other fittings designed to meet every requirement of the producer, contractor, pipe line company and refiner. The quality, durability and general excellence of these products are doubly guaranteed by the manufacturer and the Continental Supply Company.

"If CONTINENTAL Sells It There Is No Better"

THE CONTINENTAL SUPPLY CO.

General Offices: St. Louis

Export Office: 2 Rector St., New York

London Office: 316-317 Dashwood House, Old Broad St., London E. C. 2, England

CONTINENTAL

Say you saw it in The OIL WEEKLY

Howard Smith Stancliff Patent

Howard F. Smith
President

Clarence L. Carter
Vice-President

Howard F. Smith, Jr.
Secy.-Treas.

Well Screen and Break Out Tongs

- - - - - - - THE PERFECT SCREEN FOR OIL WELLS

Results Prove Our Statements

Users of the Howard Smith Stancliff patent well screen invariably become enthusiastic over the results they obtain. The reason is obvious—It does not clog or get sand-jammed—will stand punishment—eliminates grief—does not tear—is made of highest grade materials and is the one screen whose entire surface is screening surface. Use this well screen and get the satisfaction you have been looking for. Write for prices and literature. No obligation incurred. Our users are our biggest boosters. Be one of them!

Howard Smith

SMALL ROTARY

$250

COMPLETE

Get Our Service When You Want Supplies Quick!

We are ready for any emergency the tremendous activity now in Texas might bring forth. When you say QUICK to us you get it QUICK.

IN STOCK READY FOR USE

PACKERS, Screw or Ratchet.

SETTING SHOE, with 2 back pressure valves and wash ring inside.

BREAK-OUT TONGS.

BACK PRESSURE VALVES.

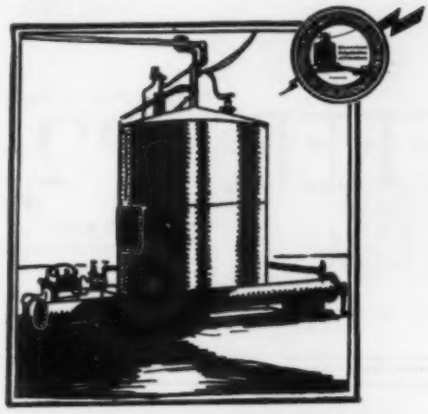
WOOD WASH PLUGS.

Write us for literature. Howard Smith service and prices are what you have been looking for.

HOWARD SMITH CO.

806-808 WALNUT ST. Phone Preston 0131 HOUSTON, TEXAS

the "cut-oil" boomerang



PETRECO

A boomerang is a thing that comes back at you; so does "cut-oil" and at a price so low it hurts worse than the boomerang of the Australian aborigines.

A "Petreco" installation immediately changes things: your "cut-oil" is conditioned to pipe line requirements, brings the full posted market figures, and low prices and small dividends give place to maximum profits. Don't overlook this: the cost of the "Petreco" plant and its operation is negligible compared to your savings; the outlay is soon returned by the increase in size of checks for your oil.

First, let the "Oil Doctor" test your crude and make his recommendation, then, ask some live operator how he solves his "cut-oil" problems. We will send a list of "Petreco" outfits; and suggest you examine as many other methods as possible for your findings will make you more enthusiastic for Petreco.

"The Electrical Process for the Dehydration of Crude Oil Emulsions" should be used by every producer whose crude tests higher than pipe line requirements.

PETROLEUM RECTIFYING COMPANY OF CALIFORNIA

308 UNION OIL BUILDING, LOS ANGELES, CALIF.

336 HUMBLE BUILDING, HOUSTON, TEXAS.

USED ON BOILERS IN EVERY FIELD

What

the Texas operators want in a boiler gauge cock they get in the Shaffer—a perfect shutoff every time, wheel enclosed—consequently protected from fire—all parts interchangeable,

reasons—over 30,000 are in use, Shaffer Gauge Cocks are standard equipment by practically all oil field boiler manufacturers.

J. E. SHAFFER COMPANY
316 Mid-Continent Bldg. Tulsa, Okla.

AT ALL SUPPLY STORES

SHAFFER
the Standard Boiler
Gauge Cock

$2.25 *each*
All parts interchangeable

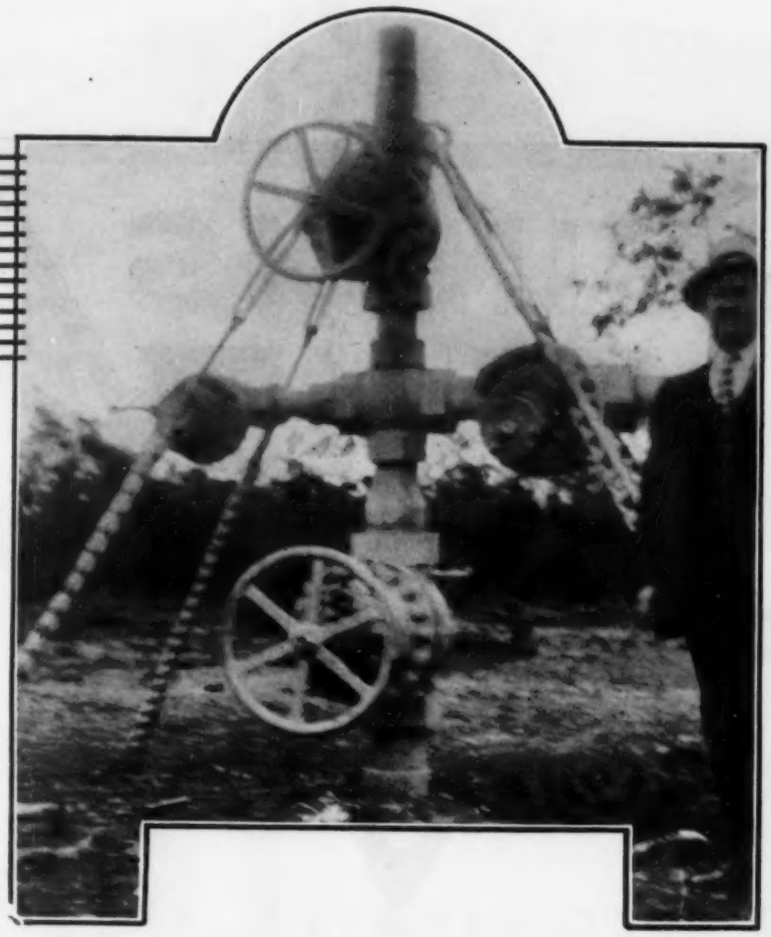
FURNISHED WITH COMBINATION FIBRE WHEELS OR A SPECIAL ALL-METAL WHEEL FOR STRONG ALKALI WATER

Phillips Petroleum Company

General Office
Bartlesville, Oklahoma

Producers of High Grade Crude Oil and Manufacturers of Natural Gasoline

Plants located throughout Oklahoma, Texas, Louisiana and New Mexico



Holding a Wild 'Un Down With KEROTEST Valves and Fittings

When this gasser of the Houston Oil Company came in, it was sure rarin' to go.

They capped her with high pressure heavy duty KEROTESTS, fitted the main string with a KEROTEST cast steel cross and chained her down—thus this fury of nature was harnessed with KEROTESTS holding her in perfect control.

This is merely illustrative of the general preference, and the confidence, too, that oil men hold for KEROTEST valves and fittings everywhere.

KEROTESTS have won their reputation throughout the oil fields on sheer merit. The high grade electric steel used in their manufacture, the exacting laboratory tests to which every KEROTEST valve is subjected, are but two of the many reasons why KEROTEST Products are the best that money can buy.

There's a KEROTEST distributor handy to every oil field, they will be glad to serve you.

KEROTEST MANUFACTURING COMPANY

Pittsburgh, Penna.

Carried in Stock and Sold by

GRINNELL COMPANY OF THE PACIFIC

Los Angeles — San Francisco

OIL WELL SUPPLY COMPANY

Oklahoma — Kansas — Colorado — Wyoming

NORVELL-WILDER HARDWARE COMPANY

Houston — Beaumont — Shreveport — Fort Worth

Export Distributors:

OIL WELL SUPPLY COMPANY

Pittsburgh — New York — Tampico — London

SIMMS

—Simms Refinery at Dallas

PRODUCERS
PURCHASERS
and
REFINERS
of
TEXAS CRUDE OIL

SIMMS OIL COMPANY
Dallas

Prevention

IS THE BEST FORM OF

Fire Insurance

The vapor tight steel roof tank, when expertly built and equipped, is both a practical and economical fire prevention measure, because:

The initial cost compares favorably with make-shift forms of storage.

It keeps vapor accumulations, the source of danger and a great loss in themselves, down to a minimum.

It can be furnished in convenient sized units—from 500 to 120,000 barrels.

After years of service it has an attractive salvage value.

It earns actual cash savings on insurance premiums. P. I. W. builds the vapor tight steel roof tank with a skill that only long experience and an unusual shop and field organization can give.

No P. I. W. tank of this type has ever been ignited by lightning or figured in a fire of serious proportions.

Let us give you a quotation

THE PETROLEUM IRON WORKS COMPANY

PLANTS, Sharon, Pa., and Kansas City, Kans.

SHARON, PENNSYLVANIA

New York St. Louis Tulsa Houston Kansas City

The Chemical treatment *is the* Scientific treatment

TRET-O-LITE is the trade-name we adopted to designate the *chemical* method of treating cut oil—a method originated by us and protected by process patents.

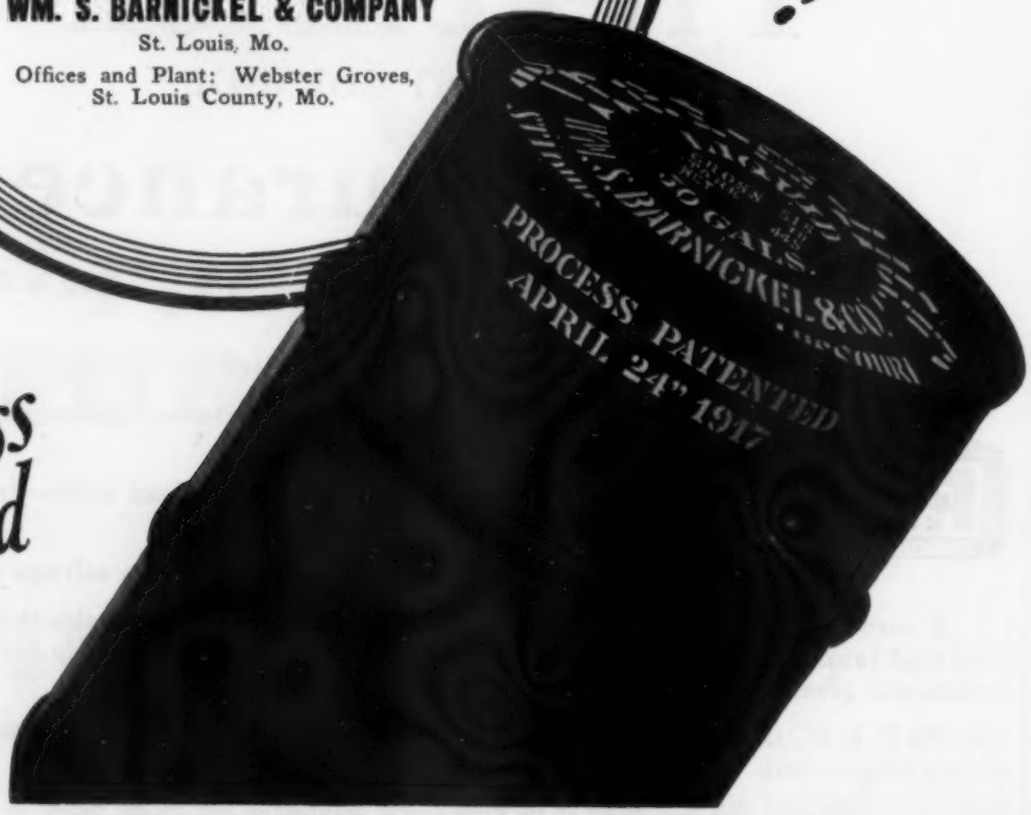
Experience has borne out what science long ago proved—that the "petroleum emulsion" presents a problem in *chemistry*, and that the *chemical* method of treatment is the only thoroughly scientific and complete method. It is also the simplest and most economical method.

Let us have our nearest field representative call on you. No obligation.

WM. S. BARNICKEL & COMPANY

St. Louis, Mo.

Offices and Plant: Webster Groves, St. Louis County, Mo.



Process Patented

Tret-O-lite

Reg. U. S. Pat. Off.

say you saw it in The OIL WEEKLY

Magnolia Petroleum Company

Producer *Refiner* *Jobber* *Distributer*

High Grade Petroleum Products

FUEL OIL

LOADING STATIONS AT

BEAUMONT CORSICANA SABINE GALVESTON FT. WORTH
HARBOR ISLAND LULING CORPUS CHRISTI DALLAS
HERMA, ARK. MIRANDO

MANUFACTURER OF

Magnolene
REG. U.S. PAT. OFFICE

THE

DEPENDABLE LUBRICANT

"A Grade for Each Condition

For satisfactory operation of Ford Cars use Magnolene Motor Oil for Fords

REFINERIES LOCATED AT

Beaumont, Corsicana and Ft. Worth

General Offices: DALLAS, TEXAS

DIVISION SALES OFFICES:

DALLAS HOUSTON FT. WORTH SAN ANTONIO OKLAHOMA CITY LITTLE ROCK
AMARILLO EL PASO

Inquiries Respectfully Solicited

Announcing

The Completion of Our New Lubricating Refinery at Fort Worth, Which Began Operation July 1, 1926.

Crude

Pure, uncontaminated **Ranger Crude** from our own wells; the unexcelled lubricating crude of the Mid-Continent Fields.

Equipment

The last word in stills, fractionating towers, Clay Treating Plant, Contact Filtering Refrigeration and Sharpless Super-Centrifuges.

Capacity

Our Filter Plant and Sharpless Dewaxing Plant is one of the largest installations of this kind.

Products

Long Residuum (Low Cold Test Motor Blend) Motor Oils (Medium, Heavy and Extra Heavy) Bright Stocks. All Low Cold Test Filtered.

Quality

Flash, Fire Test, Carbon Residue, Color and lubricating value equal to the best grades obtained from Pennsylvania Crudes.

Write or Wire Us For Specifications and Prices.

Texas Pacific Coal and Oil Co.

Fort Worth, Texas

There's Nothing Spectacular About Pipe Performance

IF you could stand by and watch with interest how one pipe out-performed another, a lot more thought would be given to your selection.

But good pipe doesn't go about its business with any sort of show. Its main purpose in life is to last—and last! And the pipe that lasts the longest is the one your wise operator favors.

For tubing, casing or line pipe, "Reading" out-performs its steel competitors two to three times over. It's genuine wrought iron pipe, and resists corrosion and vibration to the limit.

READING IRON COMPANY

Reading, Pa.

World's Largest Manufacturers of Genuine Wrought Iron Pipe

OIL WELL SUPPLY COMPANY

Distributors

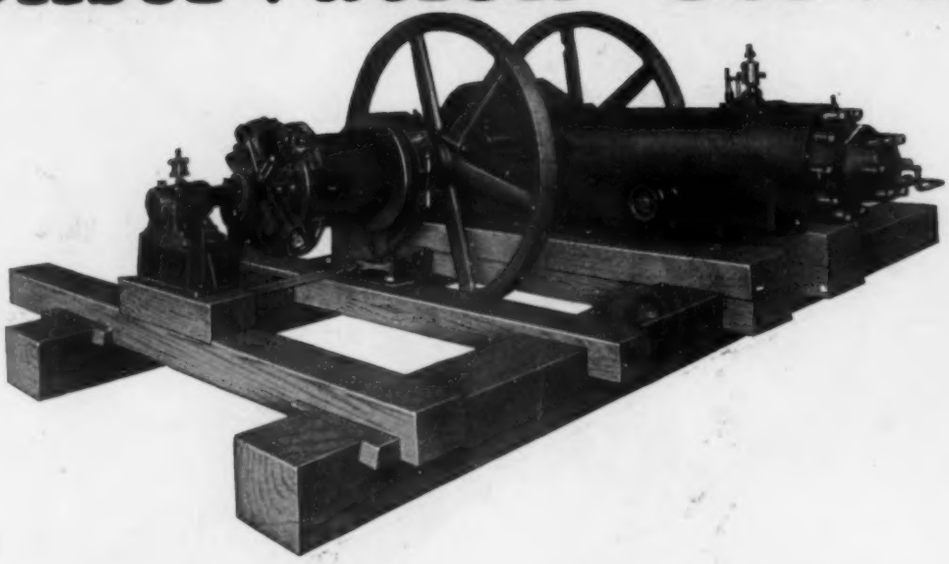
Inquire at any of their 100 branches

READING PIPE

GENUINE WROUGHT IRON

Say you saw it in The OIL WEEKLY

Conservation—Service



The Oil Industry Leads in Conservation
The Key Note of
1925 1926

The Oil Industry realizing the enormous saving in drilling with FRANKLIN VALVELESS OIL AND GAS ENGINES readily took to them as one means of Conservation.

Over two hundred FRANKLIN VALVELESS OIL DRILLING ENGINES installed in western fields during 1925 and 1926 to date. One contractor now using fourteen, another using nine FRANKLIN VALVELESS DRILLING ENGINES.

Do you want the names of these Contractors, as well as the names of others using two, three, four and five?

THINK OF IT—The fuel cost per hour to operate a FRANKLIN OIL DRILLING ENGINE is less than one half the cost of operating a Ford Automobile, running thirty miles per hour, and one half the cost of Gas where you buy it. Also a great saving in water, which is frequently a greater problem than fuel. Makes better drilling time than with any other cable tool unit.

Wherever FRANKLIN VALVELESS INTERNAL COMBUSTION ENGINES are now marketed, our representatives will furnish you, upon call, a factory mechanical expert to demonstrate and assist in the economic use of FRANKLIN VALVELESS INTERNAL COMBUSTION ENGINES. He is your man, at our expense; he'll benefit you!

Distributed by:

Atlas Supply Company
Muskogee, Okla., and Branches

International Supply Co.
Tulsa, Okla., and Branches.

New Martinsville Supply Company
New Martinsville, W. Va.

Atha Supply Company
Zanesville, Ohio.

Washington Engine & Pump Company
Washington, Penna.

Bradford Sales Company
Bradford, Penna.

Wooster Tool & Supply Company
Wooster, Ohio.

McEwen Brothers
Bolivar, N. Y.

Franklin Valveless Engine Company

Franklin, • • **Established 1879** • • **Penna.**

MANUFACTURERS OF FUEL OIL and GAS DRILLING, PUMPING and POWER ENGINES.
CAST IRON WORKING BARRELS

47 Years of Exclusive, Continuous Oil Field Service

Jones Giant Sucker Rods

WITH U.S. STANDARD THREAD

"No matter what thread is used it is only as good as the machine work"

The Better Rod and the Strongest Coupling

Not satisfied with having the best Sucker Rod made, bar none — we now offer two exclusive advantages—details, of course, but highly important to the user.

The Jones Pin Protector, (patent applied for) shown to the left above, protects the threads from dirt, sand and injury.

The Milk Bottle Plug, shown to the right, above, insures clean dry joints always.

Specify Jones Sucker Rods, they are always better, all ways.

5/8" and 3/4" Perfect and Giant Rods have 1" Pins.

THE S.M.JONES COMPANY

TOLEDO OHIO

MID-CONTINENT OFFICE 602 WRIGHT BLDG. TULSA, OKLA.

The largest exclusive manufacturers of sucker rods in the world

Dependable Source of Supply

Barnsdall has

BE SQUARE PRODUCTS

3 *Modern Refineries*

From the Oil Well to the Jobber

From the Oil Well to the Jobber

WICHITA, KANSAS

BARNSDALL, OKLA.

OKMULGEE, OKLA.

THE crude oil to these refineries is transported through our own system of pipe lines thus assuring our customers of a dependable source of supply as well as uniform quality.

We manufacture High Grade Lubricating Oils.

Wire, write or telephone

Barnsdall Refineries, Inc.

Subsidiary Barnsdall Corporation

EXECUTIVE OFFICES
Petroleum Building
Tulsa, Okla.

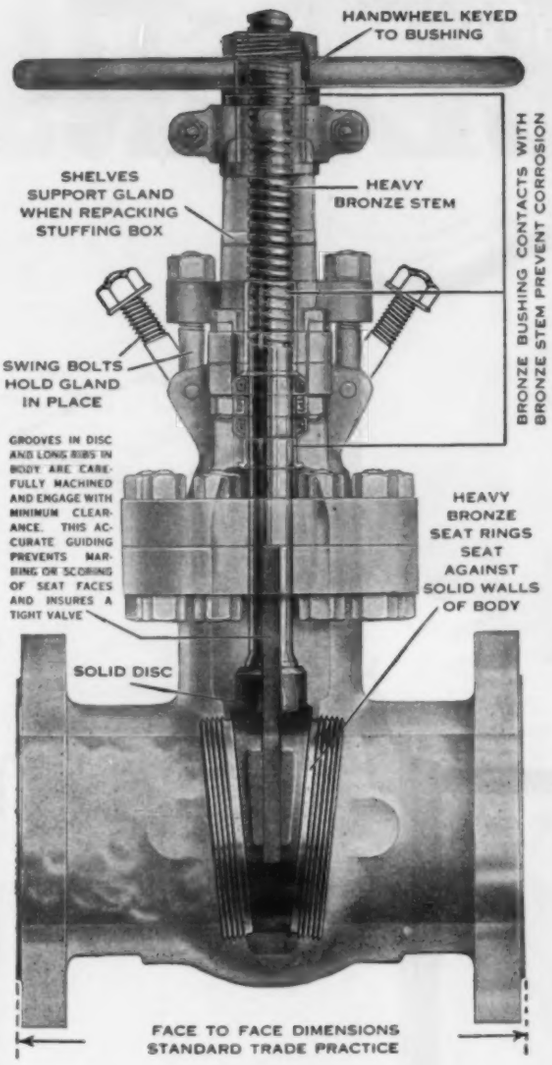
GENERAL SALES OFFICES
624 S. Michigan Ave.
Chicago, Ill.

New York, Pittsburgh, St. Louis, Kansas City, Omaha, St. Paul, Des Moines, Los Angeles, Wichita

Dependable Source of Supply

Say you saw it in The OIL WEEKLY

Inside Facts—


HANDWHEEL KEYED TO BUSHING
SHELVES SUPPORT GLAND WHEN REPACKING STUFFING BOX
HEAVY BRONZE STEM
BRONZE BUSHING CONTACTS WITH BRONZE STEM PREVENT CORROSION
SWING BOLTS HOLD GLAND IN PLACE
GROOVES IN DISC AND LONG RIBS IN BODY ARE CAREFULLY MACHINED AND ENGAGE WITH MINIMUM CLEARANCE. THIS ACCURATE GUIDING PREVENTS MARRING OR SCORING OF SEAT FACES AND INSURES A TIGHT VALVE
HEAVY BRONZE SEAT RINGS SEAT AGAINST SOLID WALLS OF BODY
SOLID DISC
FACE TO FACE DIMENSIONS STANDARD TRADE PRACTICE

LUNKENHEIMER
IRON BODY BRONZE MOUNTED GATE VALVE

Standard	125 lb.	W. S. P. 2 to 24 in.
Heavy	175 lb.	W. S. P. 2 to 16 in.
Extra Heavy	250 lb.	W. S. P. 1½ to 18 in.

Also procurable in the Quick Operating Pattern, and in the All-Iron Pattern for handling solutions which attack bronze but not iron.

Which are influencing discerning valve users to insist upon the installation of

LUNKENHEIMER

Iron Body Bronze Mounted Gate Valves

The sectional view shows at a glance the simplicity of design, the rigid construction, and the careful attention to manufacturing details—all of which finally determine service results and ultimate valve costs.

Is it any wonder, then, that operating executives who have experienced endless trouble and expense trying to keep their gate valves tight, have enthusiastically accepted the Lunkenheimer design as a worth-while development in gate valve construction, and a solution of their gate valve problems?

Wherever Lunkenheimer Gate Valves have been installed, they are aiding materially in reducing operating costs, because they require very little attention after installation; they stay tight, and maintenance expense is held to a minimum.

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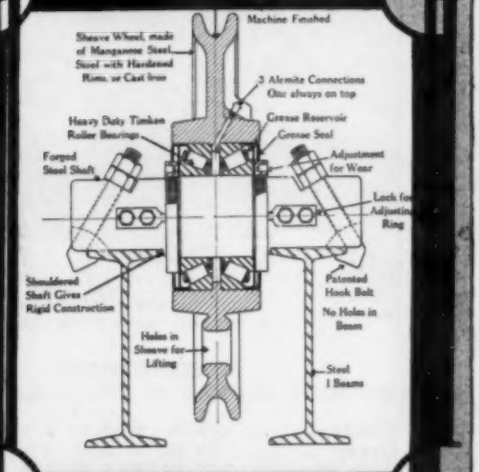
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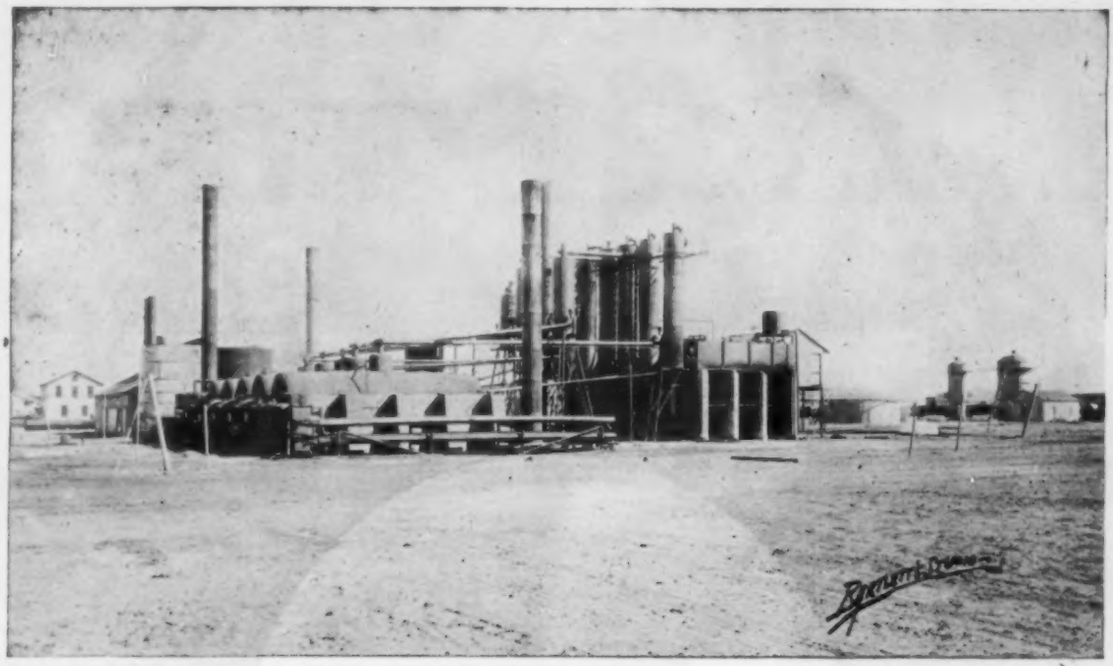

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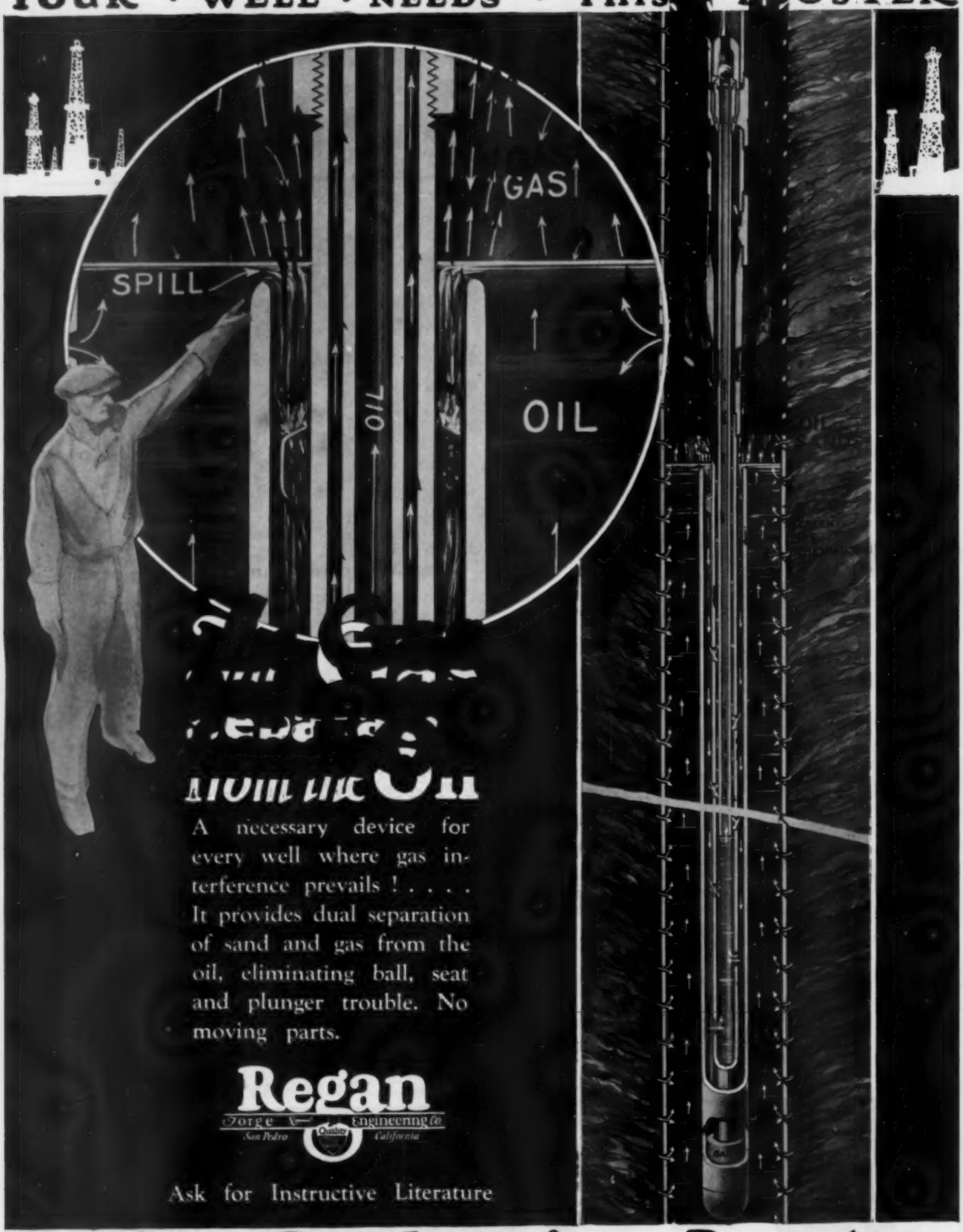

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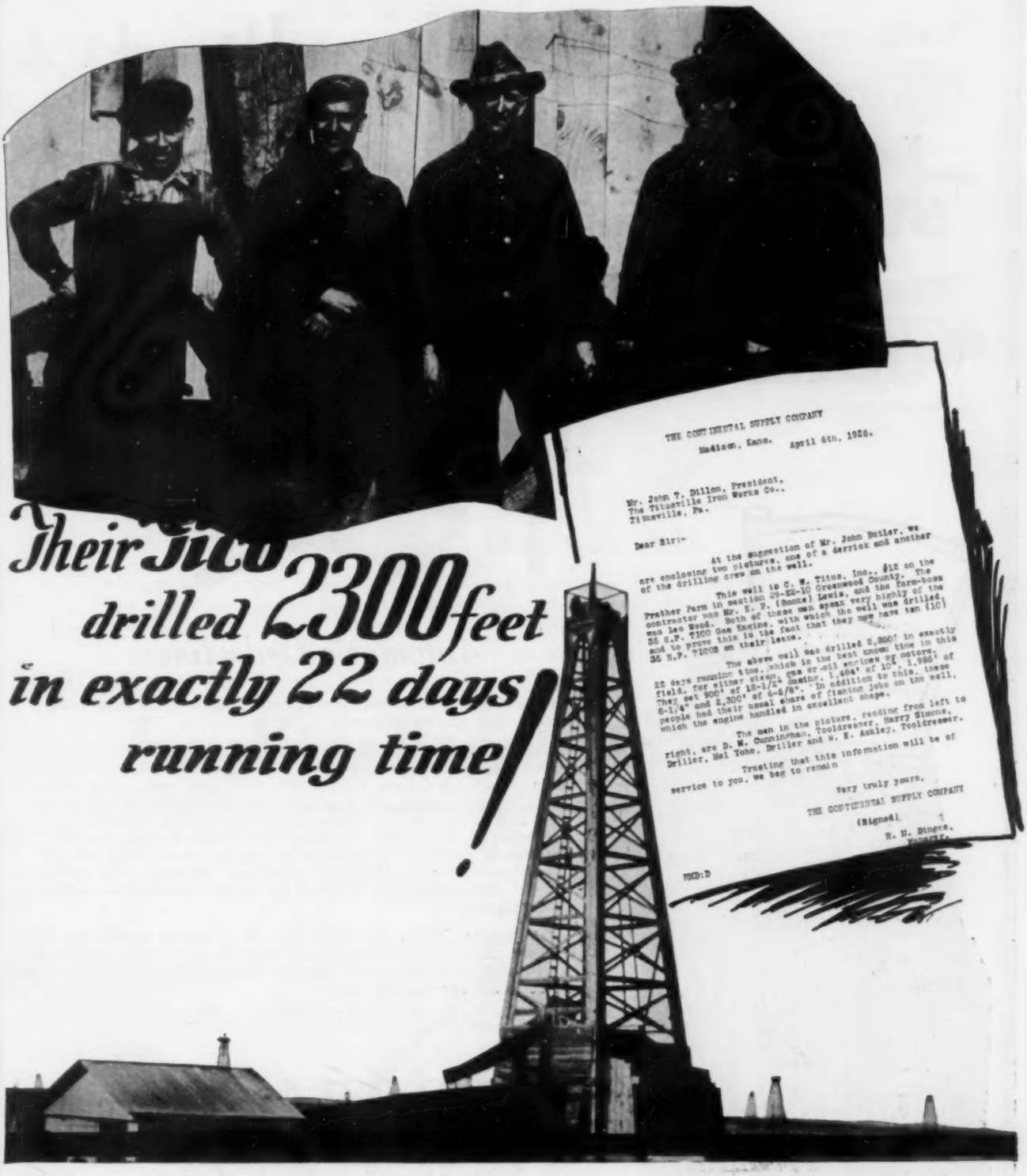
THE CONTINENTAL SUPPLY COMPANY
Madison, Kans. April 6th, 1926.
Mr. John T. Dillon, President,
The Titusville Iron Works Co.,
Titusville, Pa.
Dear Sir:-
At the suggestion of Mr. John Butler, we are enclosing two pictures, one of a derrick and another of the drilling crew on the well.
This well is C. W. Titus, Inc., #18 on the Prather Farm in section 29-22-10 Greenwood County. The contractor was Mr. E. P. (Smoke) Lewis, and the farm-hand was Leo Wood. Both of these men speak very highly of the 35 H.P. TICO Gas Engine, with which the well was drilled, and to prove this is the fact that they now have ten (10) 35 H.P. TICOS on their lease.
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(Signed)
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He's putting it up

All set

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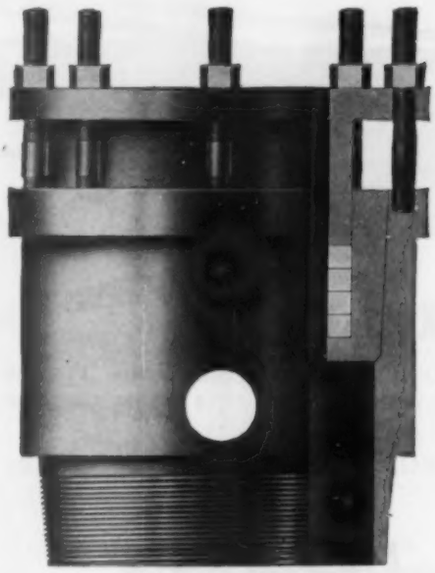

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OR

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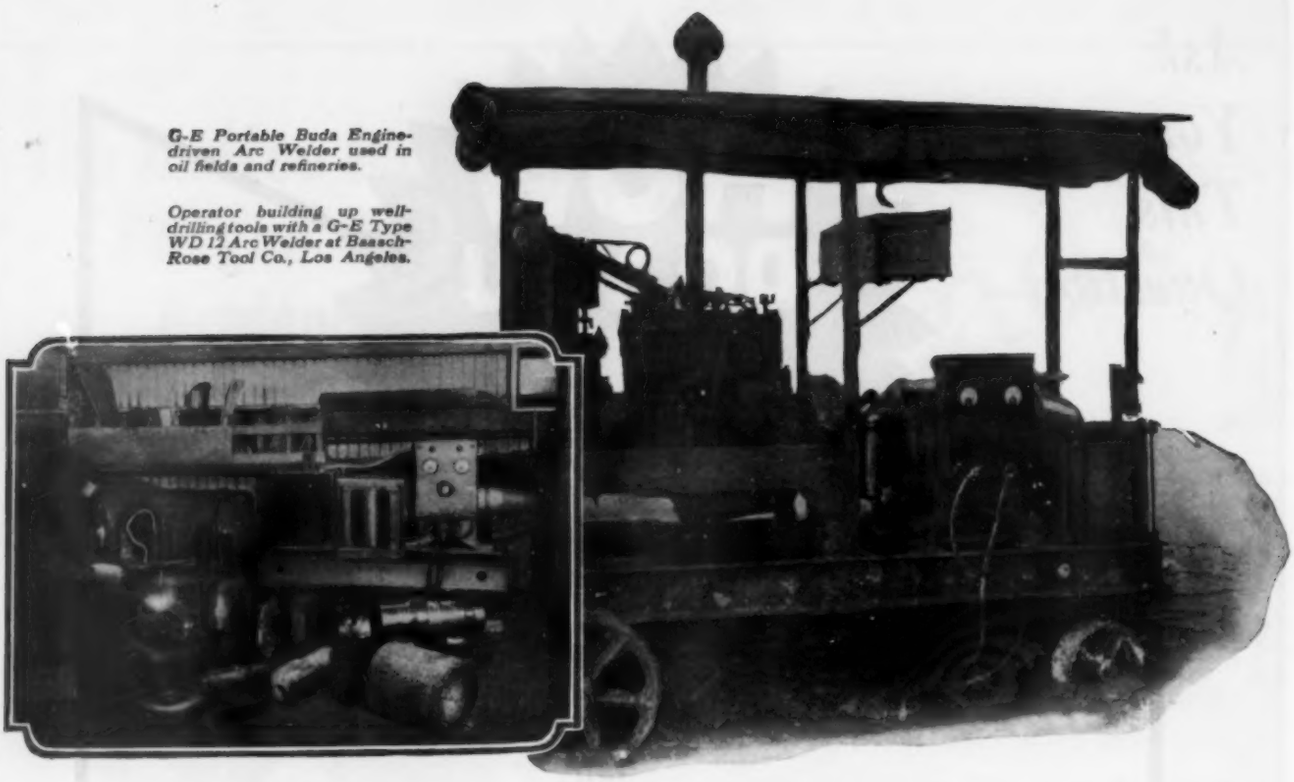

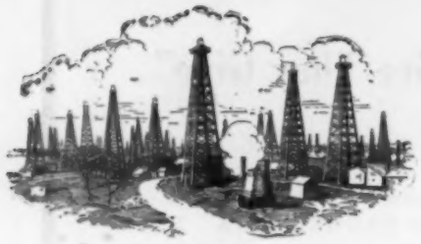

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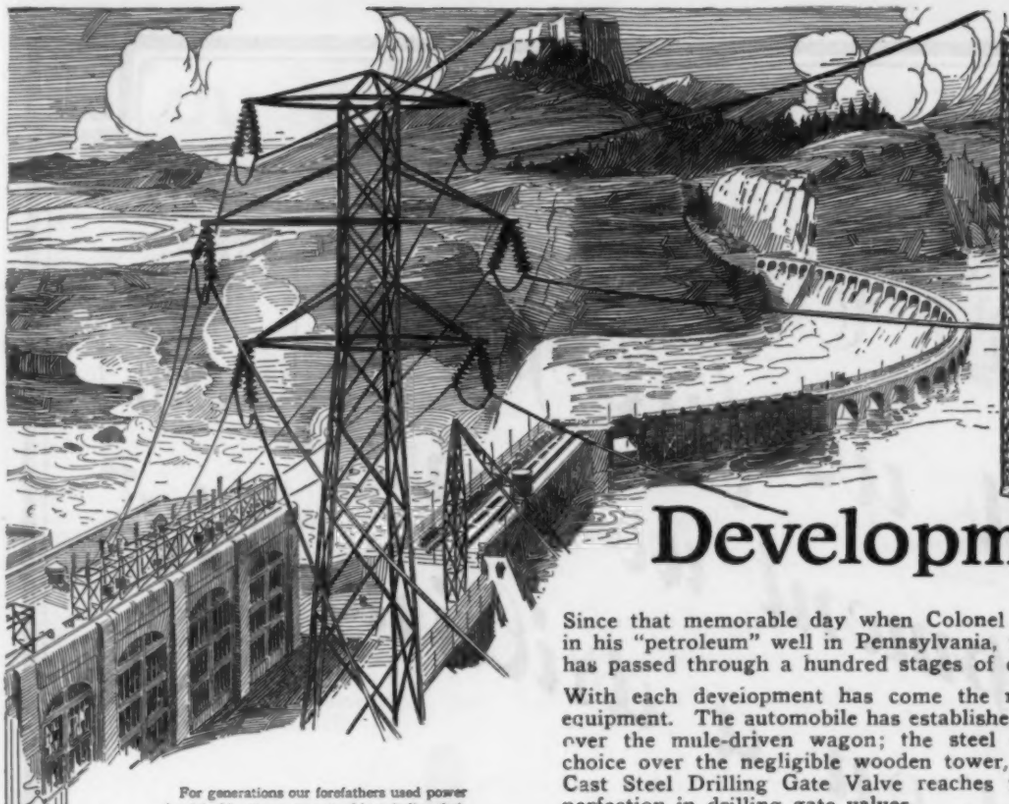

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The Real Test of a Meter

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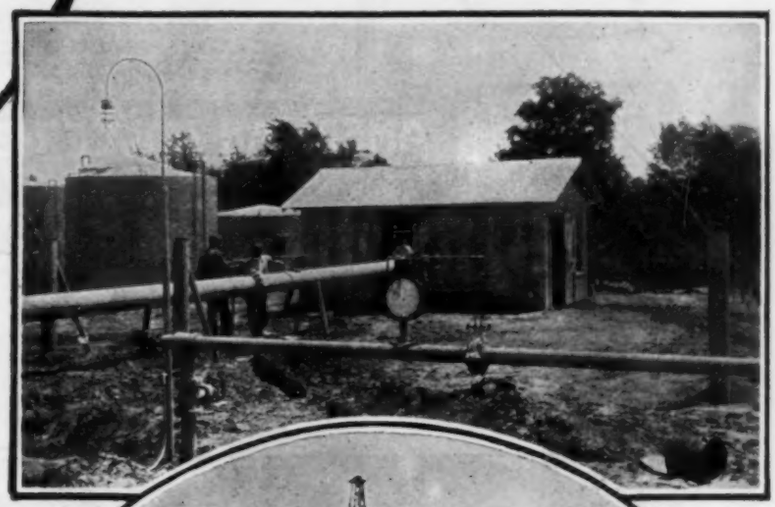

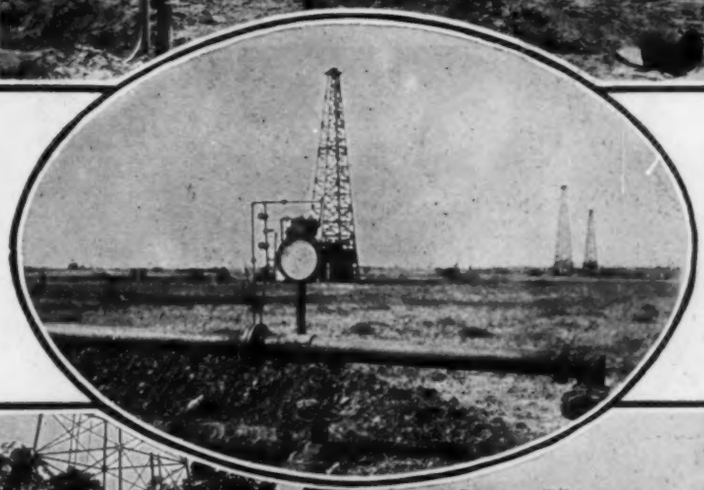

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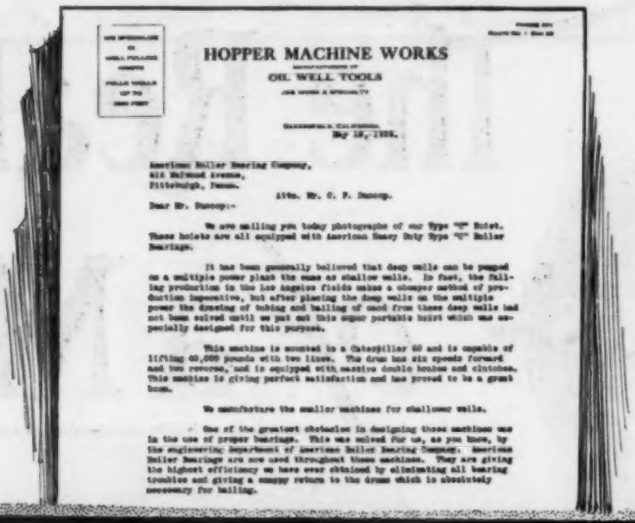

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OIL WELL TOOLS

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July 30, 1926 Volumne 42, Number 6

The OIL WEEKLY

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WORLD'S OLDEST AND LARGEST MANUFACTURERS OF OIL FIELD EQUIPMENT

What Will Texas Do?

When anyone attempts to make a forecast on oil production, he is simply setting himself up as a target for the other fellows to shoot at—as for instance, the famous combined report of the U. S. G. S. and the A. A. P. G., and the later report of the Committee of Eleven.

The writers of this review of the situation in Texas, at this time the live spot and the menace spot of United States oil production, do not claim to be geologists nor the sons of geologists. They have not been endowed with prophetic vision. They may be wrong. The next few months may open new territories for production which they do not even take into consideration. Fields they have considered may run counter to the dope offered on them.

Being but human and enjoying the good will and good wishes of their fellows, they want it distinctly understood that this article represents a composite of the views of those who have studied the situation in the various sections of Texas, practical men, who are backing their judgment with money.

As staff men of The Oil Weekly they have made it their duty to inquire into the situation, and to offer this as the best composite review or analysis possible to secure at this time.—Editor.

TAKING the entire State into consideration, it appears likely that Texas will see a material increase in production during the remainder of this year, coming from a number of sections. No immediate chance of over-production is apparent, but, as is detailed further in this article, there are several sections which hold a distinct threat.

The Texas Panhandle has seen and is seeing a drilling campaign of tremendous proportions. At the time this appears in print the Panhandle will have completed around 230 producing wells. Operations right now, including locations, derricks, rigs and drilling wells total approximately 600. Three hundred and fifty seven of this number are actively at work, 43 standing for various reasons.

Current production is slightly above 70,000 barrles per day, in five counties, Hutchinson, Gray, Carson Wheeler and Potter. The average production per well is running approximately 300 barrels per day.

Included in this production are several outstanding wells making more than 1,000 barrels per day for a long period.

Many operators well informed on the progress of affairs in the Panhandle, think that the peak will run above 100,000 barrels per day. They base this upon present production and the fact that within the next sixty days, around 300 more wells should be completed. Most of these wells are in what can be considered at least semi-proven if not proven territory.

What effect will they have?

In Hutchinson County during the months of June and July, 96 producing wells were completed. Initial production of these wells amounted to 59,790 barrels, or an average of more than 600 barrels per well. However, Hutchinson County was producing 33,860 barrels per day at the beginning of this period while at its close it was making 65,240 barrels. In other words, in 60 days the gain in production was about half of the initial production brought in during that period. When it is remembered that the initial production per week during these 60 days was fairly well distributed, this may be considered as being a rather good showing.

OF the 300 wells which should be completed in the Panhandle in 60 days, about 200 will come from Hutchinson County. The remaining 100 will come from the other four counties which have not been making anything like as good a record as Hutchinson County.

Basing their guess on the above figures, but estimating the initial of the next 200 wells as being below the initial for the past 60 days, because, naturally, the best locations as a rule have already been drilled, and also figuring in that the decline on old wells will be greater, operators with whom these writers have consulted say that Hutchinson County probably will be producing around 90,000 barrels. What the other counties will do is hard to estimate because of the erratic performance of wells already completed. It would seem, that, based upon information now at hand, but not taking into consideration the unexpected, the remaining four counties should be producing around 15,000 barrels per day.

GRAY County, however, is a problem to be reckoned with. The wells can be drilled with rotary and completions can be accomplished rapidly. Two wells, a mile apart, have shown for big flush production. Gray County may upset the dope.

In commenting on the Panhandle it is well to mention the expense incident to drilling and the difficulty in handling the crude, both of which are covered elsewhere in this issue in detail. Drayage costs running from $5.50 to $8.00 per ton, high bonuses for acreage and "what may happen in the winter" make the Panhandle a place where oil companies would do well to watch their step.

WHAT effect will the Panhandle have on the market? A hundred thousand barrels of crude per day is not to be laughed off—when it is available for competition on a rapid-transit, low transportation basis. Panhandle crude generally speaking has a sulphur content that will affect its market value. It is not now available for rapid, low-cost transit.

When one is asked the question, "Will the Panhandle hurt the crude market" one is remided of the old gentleman from the country who went to town and was struck by a motor truck. As he picked himself up, a bystander rushed up to him, and asked him:

"Did it hurt you, Uncle?"

"Wall," he replied, "it ain't done me no good."

SOME one recently said that it will take two years to drill locations in West Texas already proven! Were it not for the spectacular developments in the Texas Panhandle since the first of the year, West Texas would undoubtedly have had the center of the petroleum stage for the past several months. As it is, conservative operators place more importance on what has happened and what may happen in West Texas than on any other producing area in the United States today.

With Reagan County as a "sample" of what has been done, and with the strong possibility of opening producing territory as important an Reagan County, executives of oil companies studying the situation in Texas appear to coincide in the opinion that if there is danger of over-production, it is in West Texas.

The pioneering in West Texas has yielded a number of small wildcat producers. But in recent weeks, a 3,000 barrel well has been completed in the Hurdle district in Upton County, while a 1500 barrel well followed soon afterward four miles to the southeast of the 3,000 barrel well, on what is thought to be the same structure.

This section is covered in detail in another article in this issue, and may be followed with interest because it is undoubtedly the most important section in Texas today. It would appear that the producing area may spread out and be covered in terms of square miles rather than in acres. The acreage is owned in eighties, quarters and sections. There is already talk of another major pipe line into this section.

AN unknown quantity worth watching is the area around the Church Fields well, fifty miles northwest to the Big Lake field, and 15 miles north and slightly west of the Hurdle district. The one producing well completed here was sufficient to warrant four offset wells.

A tremendous wildcat play is on in the shallow well district in Shackelford County.

Cook and Montague counties are also getting a play. This section will bear watching.

The Westbrook well in Winkler County, described as the "wildest of all wildcats," twenty-five miles from a railroad, and 50 miles northwest of the nearest production, is flowing by small heads in an incompleted stage. It was drilled

on in defiance of geology, after going through the salt, at a low level.

The above may all be considered as "threats." There is little likelihood of a large amount of immediate production, but from a long range standpoint, they are all important.

East Central Texas

POSSIBILITIES of production in Central Texas were brought to mind forcibly a few weeks back by the completion of a well in what is now known as the Nigger Creek field. What Nigger Creek will do is not nearly so important as the effect of getting production on structure off the main Mexia-Powell fault. The Nigger Creek field undoubtedly will not cover a large area. Two geologists nationally known for their study of this section say that the productive area at Nigger Creek will not run more than 280 to 300 acres. Others estimate it as being somewhat larger.

But Nigger Creek has already stimulated much leasing which will be followed by drilling campaigns on prospective structures off the Mexia-Powell fault.

The idea seems general that this section will bear close watching.

Gulf Coast

DESPITE the fact that during the past year, three new salt domes have been discovered, none of which are yielding production right now, and four domes not hitherto productive have come into the producing class, and despite the further fact that productive deep sands have been opened up on the flank of the dome both at Spindletop and Sour Lake, it is not expected that the Gulf Coast country will contribute an immediate great flood of oil. Certainly it will not contribute enough to endanger the crude structure of the United States.

The peak at Spindletop should come shortly, and it is not expected to run more than 40,000 to 50,000 barrels per day, with the latter figure being considered rather high by well informed authorities. It is a fact beyond dispute that during the past nine years, no Gulf Coast field has held a production of as much as 50,000 barrels per day for as long as a week, and with the acreage held as it is on the newly discovered domes, it is not considered likely that they will run peaks that high. There has been a fear expressed by some that the new deep sands along the sides of the domes will produce enough oil to crack the market, but this opinion is by no means general.

The live spots in the Gulf Coast are at this time Spindletop, a deep sand extension at Sour Lake, new producing field at Boling, an extension to Liberty field, and a prospective campaign at Moss Bluff. The Gulf Production Company owns all of the new Orchard dome, where it has completed two producers this year. The Rycade Oil Corporation owns the Nash dome, which has kept down what otherwise might have been an intensive drilling campaign there. The new Clemens and Allen domes, five miles apart, in Brazoria County, are owned by the Roxana Petroleum Company, which has not completed a commercial producer in either. Only one rig is running on each dome.

There has been a large amount of geophysical work done in the Gulf Coast country. which seems to offer better results on such methods than other sections of the country. But as the practice is to lease up large amounts of land before the lease is either shot or subjected to the torsion balance method, it can be expected in the future that many, if not most, of the prospective fields, will never go through the frenzied drilling campaigns formerly so characteristic of Gulf Coast operations. This will, of course, tend to afford more control on production than has been the case in the past. Of course as new deep sands are developed off the old producing domes, heavy drilling campaigns will ensue, but there seems little need for fear of a great over production resulting. There is a danger, of course, of new oil affecting the price of Gulf Coast crude—in fact, Spindletop has somewhat weakened Gulf Coast crude already.

Laredo

IN the vast Laredo district where more than 100 rigs are running, there are three spots where there are immediate prospects for intensive drilling.

As soon as an adequate supply of drilling water can be had, all the close-in acreage near the Associated Oil Company's new producer in the Carolina-Texas pool will be tested. This Associated well has caused more comment than any well finished in the Laredo section in a long time. Its initial production of 700 barrels per day came from a new deep sand. This well probably will be responsible for some deep tests in the Cole-Bruni field, about 15 miles away.

The southern extension to the Aviator's pool, discovered shortly after the first of the year, has not had its southern or eastern limits defined as yet. There are about 30 rigs running in this field right now. Randado, the southernmost field along the escarpment, has possibilities of extensions in all directions but the north, dry holes limiting it in that direction.

The Laredo district is producing around 16,000 barrels a day, according to the latest A. P. I. figures, which appears to be a rather high estimate. It has had a gain of several thousand barrels per day during the past two months.

Summing up this section, it can be expected to take a spurt in production on the completion of the Humble and Magnolia pipe lines into it, as there has been great difficulty in handling the oil hitherto.

As one geologist who has made a study of this territory said lately, this district will undoubtedly see the opening of many new shallow pools, although they will be drilled as the result of a widespread wildcatting campaign, but the real hope for big production must come from deep sands. There seems no likelihood of this district flooding the market with cheap oil within the next year, but many operators will put a question mark on the Laredo country when you ask them what its future possibilities are.

Oil Strong Statistically

By R. L. Dudley

WITH half of the year 1926 gone by, with production figures on the first six months and consumption figures on the first five months available, the oil industry appears to be in a stronger statistical situation than it has enjoyed in several years.

Consumption has exceeded the estimates made several months ago, by a good margin. Production for the first six months of the year was 29,000,000 barrels under the same period for the previous year, and just about, on an average at the figure it was estimated it would run for the year. Natural gasoline production was up somewhat over the estimate, but so were gasoline exports and imports of foreign oils were under the last year's totals and also under the advance estimates for the year, by about 17,000 barrels a day.

Without going into the details as to the figures upon which the conclusion was based, one executive who has studied the situation carefully, estimates that this year the oil industry will draw from 30,000,000 to 40,000,000 barrels of crude from stocks, and from 8,000,000 to 12,000,000 barrels from gasoline stocks.

He figures that consumption will show an increase of at least 18½ per cent for the year, possibly 20 per cent.

After going into all the figures, this estimate of withdrawals would appear a little high. He estimates production for the last six months of 1926 at 19,000,000 barrels more than the first six months, or a daily average of 2,072,000 barrels per day. It is now running 2,054,000 barrels per day, although the average for the first six months was 1,977,000 barrels per day, or a total of 358,000,000 barrels for the first six months.

IT is considered probable that the production will run a higher figure per day than the present average, but even if it runs around 100,000 barrels per day more, according to the estimate quoted above, the industry will draw on gasoline stocks for more than 8,000,000 barrels and about break even on crude stocks for the year.

Elsewhere in this issue will be found an article dealing with possible crude production increases.

For the first five months of 1926, according to the best available information, the consumption of petroleum products is running 150,000 barrels per day ahead of the same period last year.

The following figures may be interesting:

Production first five months 1926	358,000,000 bbls.
Consumption gasoline (domestic) for first five months 1926	3,870,000,000 gals.
Export gasoline first five months 1926	774,000,000 gals.
Total gasoline consumed	4,644,000,000 gals.

It is estimated that the total consumption for the year will run around 13,000,000,000 gallons.

One of the interesting developments of the first five months of the year was the increasing efficiency in extracting gasoline. Last year the average amount of gasoline taken from a barrel of crude in the United States was 32.7 (this figure is arrived at from government figures after natural gasoline had been taken out). This percentage has been steadily increased thus far this year. In May the average was 35.9 per cent.

The situation would ordinarily be called a strong one. It would appear that it would justify a better market generally than exists in the refining field.

HOWEVER, despite the industry being "statistically" in a sound condition, there is considerable talk of a cut in crude oil to come in September. The same executive quoted in the beginning of this review says that he believes that a cut will surely come in the fall unless production falls off or gasoline consumption increase runs around 20 per cent.

Unwillingness on the part of the refiner to store high gravity oil at present refined oil market prices, and the unwillingness of the refiner to store gasoline during the winter months at present prices, are given as reasons for the anticipated cut.

He added that there is a lot of high gravity crude being offered right now, despite the heavy withdrawals which have been made from crude stocks for refining purposes and despite the fact that we have not been "over-producing."

After discussing the matter with a number of executives throughout the Mid-Continent, one gets the idea that it is high gravity crude with its higher prices that is in most danger. Cracking of oil has brought this about, and if we would hazard a guess it will be that as cracking progresses, the high gravity differential which now exists will be reduced and that high gravity oil areas will likely be most affected by any price changes which might come later in the year.

WE said in the beginning that the situation was good, that "statistically" the producing end of the business is in sound shape. Yet the very fact that those who fix the price of crude are thinking of a cut shows the narrow margin between a "good position" and a "bad position."

The best way to get a drastic cut in the price of crude is to bring in a lot of new production. Such action will not only mean lower prices the latter part of the year, but will affect the industry through a great part of next year.

NOW is the time for oil producers to watch their step.

UNITED STATES PRODUCTION

State—	Annual Production 6 Mo. 1926	Total 1925
Arkansas	31,389,951	78,717,700
California	110,251,388	231,768,982
Eastern States	18,171,650	37,616,700
Kansas	18,654,998	34,497,756
Louisiana	10,896,313	19,848,417
Mountain States	19,066,875	37,153,875
Oklahoma	82,724,192	167,951,575
Texas	62,490,928	150,027,406
Totals	253,646,295	759,131,872

Second Nigger Creek Producer Comes In Flowing 4500 Barrels

Mexia, Texas.—The second oil producer for the Nigger Creek field was completed July 25 when the Transcontinental Oil Company's Cochrum 1, a northeast offset to the discovery well, made an estimated flow of 4500 barrels initial after drilling 10 feet of Woodbine sand pay to a total depth of 2853 feet. The heavy flow of this new well caused the daily output of the discovery producer to drop from 1995 barrels daily to 950 barrels daily on Monday of this week, while the Cochrum well made 3784 barrels of pipe line oil during the 24 hour gauge ending 7 a. m. July 27.

The Cochrum well was bailed in late Sunday afternoon, and made several heads on open flow with considerable gas in evidence, but when turned into flow tanks the flow of oil ceased. Shortly before midnight the oil came back with heavy pressure, and at 7 o'clock Monday morning the flow tanks gauged 1380 barrels of pipe line oil. The well is credited with having averaged 185 barrels per hour during the first 20 hours after beginning its steady flow. The Rosson discovery well is making about three per cent b. s. and water, without showing an increase during the past two weeks, while the new producer is free from cut oil on last reports.

Pure Oil (Prairie) Pipe Line Company is running the oil from both wells.

This completion is the forerunner of a heavy quota to be listed within the next 30 days in the Nigger Creek field, as 22 tests were drilling at the close of the past week, with work being rushed to finish rigging up on 31 additional locations, while 7 locations were awaiting materials, making a total of 60 operations for the field. Four or more tests are scheduled to be down to the Woodbine pay within the next ten days, with the Pure Oil Company's O'Dell 1 and Transcontinental Oil Company's Cogdell 1 nearing the expected producing horizon early this week. Both of these tests failed to encounter the Austin chalk formation at the normal level, and may split the fault in the chalk body, thereby indicating their close relation to the west edge of the producing structure.

The new producer was reported to be free from cut oil, and logged the Austin chalk at 2208-2420 feet, with a surface elevation of 500 feet, while 6⅝ casing was cemented at 2842½ feet. The Rosson discovery well, which was completed by Transcontinental Oil Company July 8 with an initial flow of 2900 barrels, logged the chalk at 2312-2430 feet, with a surface elevation of 499 feet (derrick floor measurement), and drilled Woodbine sand at 2841-45 feet, with the casing set a short distance in the pay horizon to shut off water above the pay. The discovery well began making b. s. and water on the second week after completion, but this cut oil has never climbed above four per cent. The discovery well flowed 2060 barrels of fluid during the 24 hour gauge ending 7 a. m. Monday, with about 60 barrels of cut oil in evidence.

The prospect of considerable flush oil being available in the Nigger Creek field shortly has led to The Texas Pipe Line Company starting work on building seven miles of six-inch line from the old Mexia field to a pump station site on Nigger Creek. C. C. Rickard has been transferred from Breckenridge to take charge of the Nigger Creek pipe line activities of The Texas Pipe Line Company, while J. B. Haden is the district superintendent. Humble Pipe Line Company is also soliciting connections in the field to purchase crude, while Gulf is expected to build a line in the event production is scored on the two small tracts that Gulf purchased immediately after the completion of the discovery well. Sinclair and Magnolia are likewise planning to enter the field, thereby assuring ample pipe line facilities regardless of the peak production reached.

The long delay in the completion of the Transcontinental Oil Company's Cochrum well after cementing casing led to rumors that some sort of a deal was pending, but nothing definite has materialized along these lines. The well was ready for completion on the Tuesday preceding the completion date, but the drilling of the cement plug and bailing was postponed from day to day until the close of the week.

New drilling records for time in the completion of wells in the East Central Texas fault region are expected to be made at Nigger Creek, as the veterans of the five previous fields are on hand with their experienced crews, and formations are comparatively easy going in this new field.

Texas Wells Average 16.51 Barrels Daily Production in June

Completion of 1411 new wells since March raises well average along with total output

Houston, Texas.—There were 23,951 producing wells in Texas during June, which turned out 11,864,670 barrels of crude, a daily average for the state of 395,489 barrels or an individual well average of 16.51 barrels.

Such figures reveal an increase in drilling activity during recent months as well as an increase in results of this activity. New discoveries in Texas fields have brought about better production to the extent of raising the individual well average in the state 1.22 barrels from March to June. In March of this year there were 22,540 producers with a daily well average of 15.29 barrels. This shows a total of 1411 completed producers within the past three months, or an average of 15.5 wells per day. Production in Texas during March was 10,684,863 barrels, or 1,179,807 barrels less than June. This difference, plus the decline from old producers in the state, has been produced by the 1411 new wells.

Although the Panhandle region and West Texas have served chiefly as the source of immediate gain in average well production with wells averaging from 150 to 250 barrels, the Gulf Coast section stands out with the highest average of any section having among the largest number of wells. This heavy crude territory, with a total of 2458 wells, thus serves in a big way to continue to hold up the well average in the state, turning out 37.76 barrels per well during June. The only other two sections of Texas having more than 2000 wells fail to show a well average of eight barrels, and therefore play a big part in holding the state's average per well as low as it was in June.

Coast Gains

The coastal territory shows a gain of 100 wells from March to June, having 2358 producing wells during March. The 100 new producers have served to bring the individual well average to its present yield of 37.76 barrels daily from 32.67 barrels in March.

Spindletop field stands out as the leader

TEXAS WELL AVERAGE BY FIELDS

The daily average production per well during the month of June, with the total number of wells and daily production by fields follows:

NORTH TEXAS DISTRICT

Fields	No. Wells	Daily average Prod. for Field	Well Av. Per Day in Bbls.
Archer County	2,662	29,865	11.21
Baylor County	21	125	5.95
Burkburnett	3,444	12,300	3.57
Clay County	233	540	2.31
Cooke County	1	10	10.00
Electra	2,964	16,105	5.43
Jack County	7	120	17.14
K-M-A and Iowa Park	827	4,270	5.16
Montague County	111	4,425	39.86
South Vernon District	429	13,960	32.54
Throckmorton County	9	500	55.55
Young County	675	7,605	11.26
Totals	11,383	89,825	7.89

CENTRAL WEST TEXAS DISTRICT

Brown County	600	7,440	12.40
Callahan County	1,352	3,570	2.64
Coleman County	96	1,230	12.81
Palo Pinto County	154	420	2.72
Ranger-Eastland	752	5,530	7.35
Shackelford County	695	9,895	14.23
Stephens County	1,295	11,545	8.91
Totals	5,404	41,540	7.68

EAST CENTRAL TEXAS DISTRICT

Corsicana-Powell	825	28,680	34.76
Currie	52	870	16.73
Mexia	429	13,110	30.55
Richland	102	1,480	14.50
Wortham	288	7,765	26.96
Totals	1,696	51,905	30.60

PANHANDLE DISTRICT

Carson County	37	2,790	75.40
Gray County	8	2,880	360.00
Hutchinson County	131	40,005	305.38
Potter County	1	30	30.00
Wheeler County	7	205	29.28
Totals	184	45,910	249.51

WEST TEXAS DISTRICT

Crane County	2	170	85.00
Crockett County	14	870	62.14
Howard County	3	55	18.33
Mitchell County	90	3,410	37.88
Reagan County	107	30,690	286.82
Scurry County	4	56	14.00
Upton County	14	460	32.86
Totals	234	35,711	152.61

SOUTH CENTRAL FAULT DISTRICT

Luling	469	22,458	47.88
Lytton Springs-Lockhart	342	4,460	13.04
Minerva-Rockdale	395	225	.56
Thrall-Williamson County	20	51	2.55
Chilton-Falls County	3	27	9.00
Brenham	10	85	8.50
Totals	1,239	27,306	22.03

GULF COAST

Barbers Hill	5	510	102.00
Batson	293	1,330	4.54
Big Creek	12	966	80.50
Blue Ridge	15	800	53.33
Boling	30	2,665	88.80
Damon Mound	24	734	30.58
Dayton	7	73	10.42
Goose Creek	240	10,450	43.54
High Island	6	102	17.00
Hull	316	24,500	77.53
Humble	269	4,232	15.72
Markham	14	86	6.14
Nash	4	460	115.00
Orange	148	13,783	93.12
Orchard	1	703	703.00
Pierce Junction	15	1,830	122.00
Saratoga	369	1,410	3.73
Sour Lake	309	5,500	17.80
South Liberty	108	5,835	54.02
Spindletop	160	5,335	33.34
West Columbia	113	8,525	75.44
Totals	2,458	92,829	37.76

SOUTHWEST TEXAS*

Aviator	93	2,243	24.11
Callahan	32	250	7.81
Cole	6	297	49.50
Henne-Winch-Fariss	87	2,731	31.39
Ina	12	90	7.50
Mid-Ojuelos	62	432	6.96
Mirando Valley	13	70	5.38
Piedras Pintas	1	200	200.00
Randado	10	582	58.20
Schott	120	1,102	9.16
Somerset	892	2,228	2.49
Wolcott	25	238	9.51
Totals	1,353	10,463	7.73

*Southwest Texas fields reported for May as June reports were unavailable.

SUMMARY

District	No. Wells	Daily average Prod. of District	Daily Av. Prod. by well in District
Texas Gulf Coast	2,458	92,829	37.76
Southwest Texas	1,353	10,463	7.73
North Texas	11,383	89,825	7.89
Central West Texas	5,404	41,540	7.68
East Central Texas	1,696	51,905	30.60
Texas Panhandle	184	45,910	249.51
West Texas	234	35.711	152.61
South Central Texas	1,239	27,306	22.03
Totals	23,951	395,489	16.51

in the Gulf Coast in bringing up the daily average of individual wells in this section, having increased from 19.65 barrels per well in March to 33.34 barrels in June. The addition of 14 wells of considerable size to Hull field during the past three months has brought the well average of this field from 53.77 barrels to 77.53 barrels. Nineteen new producers in Orange field since March served to raise the well production of the field from 90.69 barrels to 93.12 barrels.

Slow development of production around newly opened domes in the Coastal country has kept them from adding to rise in well average. Deep sand drilling around the old salt dome pools has featured the Coastal activity for the past few months. Besides Spindletop, which is the best example of such development, the Sour Lake field is seen to have made a gain in well average of 3.71 barrels with five big producers completed since March, bringing the well average of the 309 wells to 18.80 barrels.

The Laredo district, inculding nine pools, although failing to contribute materially to the gain within the past three months, shows signs with present activity of coming to the front within a reasonably short time. More than 100 wells completed since March have raised the district's well average about two barrels.

Big Panhandle Average

In the High gravity crude producing districts of the state, the Panhandle and West Texas sections led with a wide margin on daily crude yield per well during the month of June, owing to the big volume of flush coming from new completions. The Panhandle district averaged 249.51 barrels per well daily from a total of 184 producers, while the West Texas district ranged second with 234 wells averaging 152.61 barrels daily per well. The older fields in the North Texas and Central West Texas districts averaged 7.89 and 7.68 barrels daily per well, respectively, while the East Central Texas fault region maintained a daily yield of 30.6 barrels per well.

The Panhandle district is now working up to its peak production level, which should be reached in the present defined oil producing areas within the next several months. Hutchinson County is counted on to contribute the greatest quota, with Gray County taking second position. The former county averaged 305.38 barrels per well daily during June from 131 producers. This average gave Hutchinson County the highest yield per well for the month among all the larger group of light crude producing fields in the state, while Gray County led in actual production per well daily with eight wells averaging 2880 barrels, or 360 barrels per well daily. This high average was largely due to one well on the Wilcox Oil & Gas Company's Worley-Reynolds lease making more than 2500 barrels daily in June. Carson County section of the Panhandle averaged 75.40 barrels daily per well from 37 flowing and pumping wells in the granite wash pay formation, and such an average has been furnished by the county over a long period. Wheeler County's average was materially increased in June due to the reconditioning of an old well, and drilling in of a 300 barrel flush producer from the granite wash pay, and during June the seven wells produced at the rate of 29.28 barrels daily each. The lone oil producer in Potter County is credited with having averaged about 30 barrels daily.

The Big Lake field, which has led all high gravity fields in the state on daily crude yield per well for more than a year, surrendered its high honors to Hutchinson County during June, but in making the comparison allowances must be made for the small amount of drilling taking place in the Big Lake field, as compared to that of the leading Panhandle county.

Big Lake Average

The Big Lake field averaged 286.82 barrels daily per well during June, with a total of 107 flowing and pumping wells on the active list.

Among other West Texas producing areas, Mitchell County produced 37.88 barrels daily per well in June, with a total of 90 pumpers drawing from the dolomitic lime pay. Mitchell County is the oldest oil field in West Texas, and has produced at the rate of about 40 barrels per well daily for the past several years. Scurry County, which is the second oldest oil bearing area established in the western part of the state, continues to average 14 barrels daily per well.

Crockett County has one producing area, with only one horizon to draw from, and during June averaged 62.14 barrels daily per well.

Crane, Howard and Upton Counties are just entering their development programs, with several producing horizons to draw from, and did not make much of a showing in June, but will register a substantial improvement in daily recovery per well within the next few months.

Operators in the Central West Texas district, centering around Eastland and Stephens counties, are receiving the smallest daily crude yield per well than any other light crude district in the state, having averaged 7.68 barrels daily per well from 5404 producers. Heavy drainage from the deep sand and lime pays in the older fields in Eastland and Stephens counties during the past half dozen years has reduced the output to a low level, while the shallow producing horizons in these two counties and adjoining ones settle to small pumpers shortly after the removal of the gas pressure from the pay. The Eastland-Ranger district averaged 7.35 barrels daily per well during June, while the Desdemona-Comanche district yielded 4.15 barrels per well.

Callahan County has more producing wells listed than any other county in the Central West Texas district, and during June its 1352 pumpers averaged 2.64 barrels daily. The bulk of the production in Callahan County is coming from shallow sand levels.

Shackelford County has increased its daily yield per well to 14.23 barrels as result of the prolific 1200-1300-foot sand pay in the Cook ranch field, which is proving to be one of the most productive shallow areas in the Central West Texas district, considering the acreage drilled. This county has a small amount of production coming from deep lime in the Ibex field, but the balance of the daily output is from shallow and semi-shallow wells in the old Moran and Albany areas. Coleman County has recently registered a substantial gain in production due to the development of the Dibrell field from the 1900-foot pay, and during June averaged 12.81 barrels daily per well from 96 producers. Flush and semi-flush production coming from the Blake and Cross Cut fields in Brown County increased the daily yield per well to 12.40 barrels from 600 wells in June. Stephens County has more deep producers than any single county in the district, and averaged 8.91 barrels daily per well, with a steady decline taking place for several years.

Burkburnett

Burkburnett, which is probably the best remembered field in Texas, has sagged to a daily average yield of 3.57 barrels per well, with a total of 3444 pumpers still on the active list. Many of these wells are operating at a loss, but the application of a strong vacuum pull on the sand affords a small volume of gas carrying a rich gasoline content that more than offsets the operating loss on many of the pumpers.

The Electra field is credited with 2964 pumpers, which averaged 5.43 barrels daily per well in June.

The K-M-A and Iowa Park section of Wichita County dropped below Electra during June, and averaged 5.16 barrels daily per well, with the shifting of positions being caused by the Electra field adding sufficient new production to balance up natural production declines, while new production was lacking in the K-M-A and Iowa Park field. These fields give Wichita County a total of 7235 pumping wells, including a few wells in the Electra district lying across the county line in Wilbarger County.

Archer is second to Wichita County in the total number of producing wells, and during June the former county produced 11.21 barrels daily per well from 2662 pumpers, as compared to 12.11 barrels daily per well in May, thereby indicating the rate of decline when new production slows down, as has been the case during the past several months.

Young County, with more than 100 deep wells in the lower end, furnished operators 11.26 barrels daily per well from 675 pumpers and a few flowing wells.

The South Vernon district, which comprises the original South Vernon field and the Noble-Dyson section of Wilbarger County, had 429 producing wells in June, and these wells averaged 32.54 barrels daily per well.

Montague County is gradually accumulating a long list of producers in the

shallow pay near Nocona, and averaged 39.86 barrels daily per well from 111 pumpers.

Although Throckmorton County maintained a higher average per well during June than any other field in the North Texas district, this was largely due to the steady performance of the Red Bank Oil Company's deep wildcat producer. This county averaged 55.55 barrels daily per well.

The Petrolia field, Clay County, which is one of the oldest high gravity fields in the state, is averaging 2.31 barrels daily per well, but in reality the shallow wells are doing less than a barrel daily, as about 90 barrels of the production in the county is coming from Gulf's three deep producers on the Worsham ranch.

The East Central Texas fault region, embracing five fields between Mexia and Corsicana, had a total of 1696 pumpers that averaged 30.6 barrels each during June. This average was being maintained after the fields had yielded 191,642,987 barrels since November, 1920. The Corsicana-Powell field furnished 825 of these pumpers, with a daily average of 34.76 barrels daily per well, and the Mexia field averaged 30.55 barrels daily per well from 429 pumpers. The production curve of the Mexia field has been straighter than any of the fault line fields drawing from the Woodbine sand for the past year, and since the discovery of the Nigger Creek field on a nearby structure, opinions have arisen as to the possibilities of the oil having been drawn from the distant point of accumulation to account for Mexia's steady performance. The Wortham field averaged 26.96 barrels daily per well, with 288 pumpers listed, while the Richland and Currie fields were under the 20 barrel mark on daily crude yield per well.

TEXAS FIELD ACTIVITIES BY FIELDS

PANHANDLE DISTRICT

Field—	Active Tests	Shut Down	Rigs & Derricks	Loca-tions	Tot'l
Carson County	26	3	..	..	29
Collingsworth County	1	..	..	..	1
Dallam County	1	..	..	..	1
Gray County	14	2	42	9	67
Hansford County	..	..	1	..	1
Hartley County	2	..	5	1	8
Hemphill County	1	..	..	..	1
Hockley County	..	..	..	1	1
Hutchinson County	280	20	100	50	450
Lipscomb County	1	..	..	..	1
Moore County	6	1	2	1	10
Ochiltree County	2	1	..	..	3
Potter County	1	..	2	..	3
Roberts County	1	..	..	..	1
Sherman County	..	..	3	1	4
Swisher County	..	1	..	..	1
Terry County	..	..	..	1	1
Wheeler County	4	2	2	5	13
Totals	340	30	157	69	596

NORTH TEXAS DISTRICT

Archer County	58	9	19	15	101
Baylor County	3	..	..	..	3
Clay County	7	4	2	..	13
Cooke County	2	2	1	4	9
Cottle County	..	1	..	..	1
Denton County	..	1	..	..	1
Foard County	3	..	..	1	4
Dickens County	..	2	..	..	2
Fannin County	1	..	..	..	1
Hall County	1	..	..	..	1
Hardeman County	1	1	..	..	2
Haskell County	1	1	..	..	2
Jack County	16	2	4	3	25
Knox County	..	2	..	..	2
Montague County	27	2	6	3	38
Throckmorton County	18	3	1	1	23
Wichita County	35	9	4	2	50
Wilbarger County	82	14	22	14	132
Wise County	1	2	1	..	4
Young County	32	7	7	6	52
Totals	288	62	67	49	466

CENTRAL WEST TEXAS DISTRICT

Brown County	70	26	16	10	122
Callahan County	24	3	3	6	36
Coleman County	20	13	6	6	45
Comanche County	2	3	4	3	12
Eastland County	32	8	10	4	54
Erath County	1	4	..	..	5
Hood County	1	..	..	..	1
McCullough County	6	2	2	..	10
Mills County	1	..	..	..	1
Palo Pinto County	7	3	1	..	11
Parker County	..	2	..	..	2
Shackelford County	72	6	11	68	157
Stephens County	32	15	5	2	54
Totals	268	85	58	99	510

WEST TEXAS DISTRICT

Andrews County	..	..	..	2	2
Brewster County	1	1	..	..	2
Cochran County	..	..	1	..	1
Coke County	..	1	..	..	1
Concho County	1	1	..	1	3
Crane County	3	2	8	3	16
Crockett County	12	5	1	3	21
Culberson County	1	1	..	1	3
Jeff Davis County	2	..	1	1	4
Ector County	5	..	3	..	8
Fisher County	1	..	..	..	1
Gaines County	1	..	..	..	1
Garza County	1	1	..	..	3
Glasscock County	..	2	..	..	2
Tom Green County	1	1	..	..	2
Howard County	5	2	3	1	11
Jones County	1	1	..	1	3
Kent County	1	..	..	1	2
Loving County	1	..	..	..	1
Lynn County	..	1	..	..	1
Mitchell County	10	1	3	2	16
Pecos County	2	1	1	..	4
Presidio County	..	1	..	..	1
Reagan County	40	2	3	14	59
Reeves County	3	..	..	..	3
Runnels County	..	1	..	..	1
Schleicher County	1	1	..	1	3
Scurry County	1	1	..	1	3
Stonewall County	1	1	..	..	2
Sterling County	3	1	..	..	4
Sutton County	1	..	..	..	1
Taylor County	..	2	..	1	3
Terrell County	1	..	1	..	2
Upton County	15	1	24	15	55
Val Verde County	3	1	..	..	4
Yoakum County	..	2	..	..	2
Total	118	36	49	48	251

EAST CENTRAL TEXAS

Anderson County	2	..	..	..	2
Angelina County	..	..	1	..	1
Cherokee County	2	3	1	..	6
Ellis County	2	..	..	..	2
Falls County	2	..	..	..	2
Freestone County	3	..	..	..	3
Grimes County	1	..	..	..	1
Limestone County	5	4	18	20	47
Milam County	1	..	..	..	1
Navarro County	1	3	..	1	5
Totals	19	10	20	21	70

GULF COAST

Austin County	1	..	..	..	1
Brazoria County	2	..	..	..	2
Chambers County	4	3	..	1	8
Fort Bend County	12	2	..	2	16
Hardin County	7	..	1	4	12
Harris County	19	2	4	1	26
Jefferson County	29	2	6	2	39
Liberty County	24	5	4	3	36
Matagorda County	7	..	1	..	8
Orange County	13	3	4	2	22
Wharton County	6	9	4	8	27
Totals	124	26	24	23	197

SOUTHWEST TEXAS

Bexar County	1	..	..	..	1
Caldwell County	3	5	1	1	10
Duval County	16	1	5	4	26
Guadalupe County	4	..	..	..	4
Jim Hogg County	14	1	3	6	24
Medina County	14	4	1	1	20
Webb County	30	3	12	7	52
Zapata County	6	..	1	1	8
Totals	88	14	23	20	145

SUMMARY

Gulf Coast	124	26	24	23	197
Southwest Texas	88	14	23	20	145
East Central Texas	19	10	20	21	70
Panhandle District	340	30	157	69	596
Central West Texas	268	85	58	99	510
North Texas	288	62	67	49	466
West Texas	118	36	49	48	251
Totals	1,245	263	398	329	2,235

Many Holes Drilled to Test Trinity Sand for Oil

East Texas fault and Louisiana-Arkansas oil areas considered most favorable for production

By Wallace E. Pratt

Director and Head of the Geological Department of the Humble Oil & Refining Company

IN Texas during recent years, a dozen or more wells have been drilled into the Trinity sand at the base of the Comanche or lower Cretaceous rocks in the hope of finding commercial deposits of oil. At the present time as many more Trinity sand tests are being projected by Texas operators. Most of these tests will go to great depths and will involve a correspondingly great expenditure. This burden of expense is being assumed in the face of the fact that nowhere in Texas, up to the present time, has important production come from the Trinity sand.

Why, then, should Texas producers drill expensive wells to test the Trinity sand for oil? Because of a widely held and reasonably well informed opinion that the chances for success justify the gamble involved. But what is the basis for this opinion that any particular test has enough chance to produce oil to justify spending the money the test will cost?

To answer the last question first: We drill tests for oil generally because we suspect that some rock bed, or series of rock beds, beneath the surface is oil-bearing. As a rule, but not always, we are so fortunate as to have some evidence also that beneath the point where we make the location, conditions are of such a nature that the oil in the suspected reservoir-rock may have been trapped so as to have accumulated. With only fair evidence, even, of these two conditions, namely, that possible source-rocks are beneath us within reach of the drill and that a suitable reservoir may have been formed, most of us are willing to drill today if we can secure the requisite leases.

Character of Sand

If this is the basis upon which we are willing to drill for oil, and if we are willing to drill tests to the Trinity sand, then it follows that we must have some reason to suspect that the Trinity sand is closely enough associated with source-beds to contain oil and that, in some localities, at least, it is of such character to form a promising reservoir and trap for oil.

What then are the direct reasons for our suspicion, or our hope, that the Trinity sand may contain oil, and how do we make up our minds where we ought to drill to find this oil?

We know, first, that the Trinity sand is of a porous character, with abundant pore space in the voids between its grains, in which oil or water might find an abiding place. Many water wells have been drilled into it, near its out crop, over the state, and copious supplies of water are drawn from it.

We know, also, that the Trinity sand constitutes the lowest member of the Comanchean series, which, in Texas, generally, was laid down upon a much older, complexly folded, and maturely eroded, pre-existing land surface. At its base, therefore, is an uneven plane, upon which it overlaps as it spreads out beneath us. In different localities this old, underlying surface consists of rocks of different age and different character. At one point the Trinity may rest upon extremely old, extremely dense rocks from which no oil could have come; whereas, at another point, it may cover organic shales and sands such as those from which we obtain oil elsewhere. Of course, we would avoid the first named areas, other things being equal, and seek the last named. But the Trinity is also overlain by a series of rocks which might well contain oil, and from which, as a matter of fact, we have already obtained some oil. Where it has been broken and dislocated so that the broken edge has been brought upward into contact with these overlying, possibly oil-bearing rocks, we would also suspect it to have become an oil reservoir.

Possible Source of Oil

Another indirect, but plausible, argument for the presence of oil in the Trinity is the well-reasoned feeling among many competent observers that the oil obtained from beds in the Cretaceous far above the Trinity in the fault line fields of East Texas, must have its source in some underlying formation, from which it has risen along the fault plane to its present Edwards-Limestone, or Woodbine, or Nacatoch sand reservoir. This underlying source-rock, it is contended, may also have supplied oil to the Trinity under favorable conditions.

But we have more direct evidence that the Trinity sand is an oil reservoir. At various places where it outcrops, or comes to the surface, we find asphalt, the residue which remains when oil seeps out into the air, in the spaces between its sand grains. This is particularly true in regions where the Trinity rests upon the series of rocks from which most of our oil in Central and North Texas and Oklahoma is obtained. We even have small oil and gas fields in Southern Oklahoma, in which part, at least, of the reservoir beds is believed to be of Trinity age. But of more importance in this connection are the shows of oil and gas that have been encountered in various water wells in the Trinity sand. Much of the present revived interest in the Trinity possibilities arises directly from a show of oil in a well recently drilled into the Trinity for the water supply of a Central East Texas town. Finally, most significant, are shows of oil in the Trinity in wells drilled for oil in Southern Arkansas, and the production of large volumes of gas, with some oil, from beds in the Trinity group above the basal Trinity sand member from deep wells in Northwestern Louisiana.

But how shall we decide where best to drill to test the Trinity? Our best guide as to test locations, perhaps, is the knowledge we have gained as to the position of favorable traps in the overlying Cretaceous rocks, which involves only the apparently reasonable assumption that these established favorable conditions in the overlying and comformably-bedded rock sheets extend downward through the Trinity. The fault line fields of East Texas and the fields of Southern Arkansas and Northwestern Louisiana, by this criterion, become the most likely areas in which to test the Trinity, and it is in these areas, and structurally similar areas, that most of the Trinity tests, now planned, will be drilled. None of the known fields of this type have been disproven for Trinity oil, with the possible exception of Luling and Somerset.

No one can safely predict that oil will come in commercial volume from the Trinity, and to anyone, except the seasoned wildcatter, the foregoing analysis must appear "a very slender reed to lean upon," but within the producing industry the case for the Trinity as a possible source of commercial oil is generally viewed as, at least, plausible. It is much more convincing than other clues which geologists have in the past pursued to a successful outcome. In any event it constitutes a basis upon which hundreds of thousands of dollars will be expended in the next few years by the oil producing fraternity of the Southwest.

Russians Visit Texas

Austin, Texas.—A party made up of members of the Soviet Petroleum Trust Grossneft of Russia will visit Texas fields early in September for the purpose of gathering first-hand information on methods of producing, transporting, refining and marketing of crude with a view of using knowledge so obtained in Southern Russia, Caucasus, Turkestan and Siberia. The party is to first visit Oklahoma and California fields.

LEADING PRODUCING COMPANIES IN

Figures taken from Gross Production

Company—	1921 1st Quarter	1921 2nd Quarter	1921 3rd Quarter	1921 4th Quarter	1922 1st Quarter	1922 2nd Quarter	1922 3rd Quarter	1922 4th Quarter	19 1st Quarter	19 2nd Quarter
Humble Oil & Refining Co...	3,766,662	3,465,591	2,791,278	3,340,163	3,776,289	2,709,212	2,438,464	2,746,283	2,335,500	2,424,020
Gulf Production Co.....	2,783,662	2,472,822	2,171,951	2,433,462	3,084,906	3,000,065	2,953,959	2,890,620	2,730,950	2,796,302
The Texas Company	2,608,512	2,969,131	3,593,508	3,370,980	3,992,607	3,549,279	3,787,962	3,609,849	2,955,737	2,794,657
Magnolia Petroleum Co.	1,072,513	1,020,487	945,693	2,468,294	1,661,043	1,368,277	1,255,624	1,243,821	1,307,659	1,302,923
Humphries Company	.....	116,759	16,616	576,934	4,507,581	3,042,630	2,682,417	2,446,900	2,313,685	2,271,839
Pure Oil Company	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
United North & South Oil Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Republic Production Co.	673,795	629,950	621,344	565,494	636,449	614,171	634,581	689,621	433,670	523,755
T. P. Coal & Oil Co.	816,869	1,124,048	1,127,171	994,860	840,520	831,339	778,230	681,107	605,285	578,658
Atlantic Oil Producing Co....	112,265	160,721	163,932	336,994	591,411	535,211	324,297	274,962	219,046	220,840
The Sun Oil Co.	256,509	283,195	257,369	226,187	171,263	306,728	159,396	279,861	267,600	298,512
Simms Oil Co.	314,522	148,020	113,935	129,183	274,680	374,471	371,342	378,412	335,263	326,061
Texhoma Oil & Refining Co...	124,584	131,897	191,351	193,227	149,154	186,722	239,677	260,930	402,650	689,790
J. K. Hughes	.....	.....	.....	42,043	365,545	290,961	335,016	212,722	219,071	501,050
Big Lake Oil Co.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Western Oilfields Corp.	.....	.....	.....	.....	1,274,200	393,727	135,913	281,728	312,520	319,175
Tidal Oil Co.	27,897	23,835	34,680	38,036	147,040	28,008	24,680	18,215	23,013	20,018
Group No. 1 Oil Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Prairie Oil & Gas Co.....	464,623	343,848	248,867	229,784	226,575	230,444	198,762	183,878	153,800	146,808
Snowden & McSweeney	365,020	298,655	422,144	436,795	207,241	128,205	219,857	265,633	174,515	303,939
Lewis Oil Co.	.....	.....	.....	.....	872,848	585,136	305,051	210,139	209,670	220,042
Grayburg Oil Corp.	31,265	30,260	32,098	31,114	35,237	39,757	40,285	105,595	119,584	114,064
Sinclair Oil & Gas Co.....	314,394	319,379	185,382	350,898	103,939	206,293	236,107	296,906	44,294	200,750
Kirby Petroleum Co.	.....	.....	13,233	459,155	556,472	190,489	144,625	133,323	86,766	11,540
Mid-Kansas Oil & Gas Co.....	256,899	344,883	312,745	243,857	217,338	255,086	262,556	215,584	192,628	177,439
Roxana Petroleum Co.	65,599	79,997	76,523	69,687	74,338	120,903	130,865	157,040	61,040	63,141
Yount-Lee Oil Co.	54,323	.....	21,959	12,254	24,809	410,363	272,290	411,878	549,741	197,928
Rio Bravo Oil Co.	51,886	51,413	50,551	47,509	45,871	43,794	50,365	86,523	116,910	147,175
Monarch Oil & Ref. Co.....	268,511	269,470	177,455	255,359	459,482	183,959	136,835	188,931	207,526	141,595
Panhandle Refining Co.	234,632	253,612	213,033	173,498	135,127	113,531	112,368	112,671	99,804	172,523
E. L. Smith	.....	.....	.....	.....	.....	.....	3,772	.....	.....	.....
Total	24,948,506	21,801,499	23,277,804	24,103,048	31,897,556	26,667,677	26,425,718	26,267,740	23,403,785	26,277,655

Total, all companies for 5 years.....
Total for 31 companies.....

Total, other companies.....

Few Larger Companies Producing Most of Texas Oil

Out of 800 Companies operating, only five appear consistently as producing over 200,000 barrels per quarter

By A. R. McTee
Staff Representative

MOST human minds revolt at anything demanding intensive concentration, such as a detailed, figure-crowded page. However, progress is expressed by figures, and everybody knows the old saying, "Figures don't lie." They do tell stories though, and the story of who has produced Texas oil as shown by quarterly production reports is extremely interesting. These reports also emphasize the stability given by a few leading companies to the industry in Texas.

It may not be a singular fact that out of more than 800 operating concerns showing production in Texas over a period of five years, only five should have a yield consistently exceeding 200,000 barrels each quarter. The law of averages is probably responsible for this; yet were it not for such companies, petroleum development would certainly lag.

The Texas total for five years beginning with 1921 and including 1925 was 582,456,387 barrels. The companies listed in the table of leading companies produced 411,953,303 barrels of the total, leaving 170,503,084 barrels for the other 769 companies.

In compiling the accompanying table a minimum of 200,000 barrels per quarter was selected as a working basis, and a company must show that much production for some quarter during the five year period to be listed. Relatively few of the companies listed maintained an output of 200,000 barrels for each quarter of the five years.

Totals show all the oil produced during the five years, as reported to the state auditor for taxation purposes.

Humble Leader Since 1923

Altough Humble Oil and Refining Company has headed the list since the fall of 1923, this organization has not always been premier among Texas Companies. Throughout the entire year of 1922 Humble ranked third, also failing to lead for a part of 1921.

With exception of the third quarter of 1921 when Magnolia Petroleum Company dropped to 945,693 barrels, Humble Oil and Refining Company, The Texas Company, Gulf Production Company, and Magnolia Petroleum Company have each produced more than 1,000,000 barrels every quarter since 1920. Humble leads; The Texas Company is second; the Gulf is third, and Magnolia is fourth. Of these four companies, The Texas Company and Magnolia Petroleum Company have shown the least variation in their output. Production curves for both would be relatively smooth. But the Humble and Gulf companies show considerable differences; for instance there are sev-

TEXAS FOR THE PAST FIVE YEARS

Tax Returns to the State Auditor)

1924						1925					
3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Totals	Company—
5,423,749	8,022,993	4,328,893	4,502,808	4,128,070	3,428,657	4,968,388	4,533,395	3,830,444	3,513,294	76,294,253	Humble Oil & Refining Co.
3,293,161	3,976,439	3,270,183	2,841,713	2,423,379	2,538,216	2,722,232	3,378,142	3,656,318	3,307,880	58,726,382	Gulf Production Co.
2,627,666	3,219,397	2,449,191	2,624,810	2,570,089	2,237,132	2,590,554	3,184,793	2,760,166	2,430,441	59,926,401	The Texas Company
2,079,722	1,763,783	1,462,278	1,607,897	1,493,430	1,418,382	1,584,990	1,527,253	1,617,239	1,476,523	29,677,831	Magnolia Petroleum Co.
4,321,628	3,245,278	.....	.....	.....	.....	.....	.....	.....	.....	25,542,267	Humphries Company
.....	.....	2,474,157	2,205,034	2,035,510	1,856,850	1,894,604	2,567,842	1,967,839	1,593,636	16,595,472	Pure Oil Company
354,076	844,024	1,026,606	2,304,443	2,452,287	2,188,246	1,798,609	1,603,716	1,473,465	1,451,897	15,497,369	United North & South Oil Co.
619,684	802,904	1,187,902	906,889	779,981	786,237	802,768	779,280	673,343	601,221	13,962,039	Republic Production Co.
314,832	497,631	454,259	273,214	427,233	218,780	244,856	254,790	230,872	214,940	11,973,518	T. P. Coal & Oil Co.
805,012	1,421,103	646,175	737,437	689,448	704,883	512,069	391,610	278,177	246,619	9,372,212	Atlantic Oil Producing Co.
567,887	530,386	432,819	524,282	1,080,875	794,944	618,643	725,113	597,821	438,410	8,658,404	The Sun Oil Co.
291,725	.....	765,743	703,129	588,816	606,530	1,485,683	785,169	539,188	425,641	8,957,513	Simms Oil Co.
579,507	480,131	554,374	544,153	.....	470,402	464,201	474,664	432,882	478,146	7,048,442	Texhoma Oil & Refining Co.
394,107	369,935	328,630	382,230	596,150	319,011	633,936	623,888	472,727	370,730	6,457,752	J. K. Hughes
.....	.....	9,203	30,531	262,047	506,615	517,450	1,202,442	1,166,302	1,723,221	5,467,811	Big Lake Oil Co.
284,040	436,385	347,270	363,848	212,226	2,625	112,234	98,800	90,160	77,553	4,745,350	Western Oilfields Corp.
444,498	1,259,043	678,440	476,485	408,067	318,318	262,521	240,349	194,881	167,522	4,835,249	Tidal Oil Co.
.....	.....	.....	.....	.....	.....	334,464	905,807	1,190,857	1,295,841	3,716,969	Group No. 1 Oil Co.
97,362	124,886	94,414	283,129	249,599	216,032	182,609	454,834	479,258	399,947	4,959,478	Prairie Oil & Gas Co.
254,561	181,206	141,670	134,822	124,772	124,666	124,200	76,249	70,542	58,553	4,113,245	Snowden & McSweeney
138,596	114,273	89,629	84,924	84,394	71,893	65,043	58,475	54,366	48,326	3,212,805	Lewis Oil Co.
285,819	160,257	279,168	365,465	432,263	370,935	358,393	342,079	357,270	336,886	3,867,794	Grayburg Oil Corp.
24,112	255,419	233,291	254,379	209,141	106,235	96,491	129,539	205,021	195,888	3,968,358	Sinclair Oil & Gas Co.
206,171	330,134	97,753	79,682	94,364	175,938	220,017	49,058	36,807	37,893	2,923,420	Kirby Petroleum Co.
102,709	156,898	160,075	155,140	96,671	178,909	125,210	157,772	127,136	117,803	3,856,838	Mid-Kansas Oil & Gas Co.
408,394	550,795	292,080	282,404	246,529	194,742	200,518	173,130	170,999	164,988	3,583,712	Roxana Petroleum Co.
195,608	169,976	166,337	118,587	118,778	101,356	146,881	120,930	131,678	139,215	3,364,891	Yount-Lee Oil Co.
140,809	137,508	193,179	187,418	209,545	209,508	454,080	292,673	272,100	316,468	3,105,285	Rio Bravo Co.
86,573	75,630	78,931	79,670	66,869	62,462	30,240	230	34,626	.....	2,723,990	Monarch Oil & Ref. Co.
162,567	142,701	162,139	195,861	183,547	373,812	158,989	120,377	100,091	80,818	3,301,696	Panhandle Refining Co.
310,425	693,525	130,639	44,200	31,583	120,717	155,840	139,375	137,612	90,074	1,853,790	E. L. Smith
21,403,785	41,839,186	31,328,240	33,175,937	32,221,650	31,194,183	38,129,092	30,328,549	34,164,140	31,443,244		Total

.....582,456,387

.....411,953

.....170,503,084

eral jumps of two, three, and even four million barrels per quarter, especially with the Humble.

The biggest quarterly production ever shown in Texas for one company was reported by the Humble Oil and Refining Company for the fourth quarter of 1923 when its output was 8,022,993 barrels. It was during this time that Powell reached its peak of more than 357,000 barrels daily, and Humble was a major producer at Powell.

Through production reported by the Humphries Company can be traced the development of Mexia. The same thing is also true of the United North and South Oil Company at Luling, and The Big Lake and Group No. 1 companies at Big Lake.

Humphries' production began in the last quarter of 1921, with more than a half million barrels. At the beginning of 1924 The Pure bought the Mexia field, and Humphries name does not appear again.

By the third quarter of 1923 the United North and South had developed production exceeding 350,000 barrels at Luling, and appeared consistently among the leading companies from then on. This company will not be listed among Texas companies again, having recently disposed of its Luling holdings, to Magnolia Petroleum Company, and terminated its corporate existence.

The Big Lake Company entered the million barrel class early in 1925 and has shown an increasing yield since. Its holdings include much of the Big Lake field, Reagan County, Texas. Group No. 1 Oil Company, sister company to Big Lake appeared among the leading companies during the second quarter of last lear, and like the Big Lake organization, is gaining in output each quarter.

No other company in Texas with less than a million barrels per quarter has shown the steady yield that the Republic Production Company has. For every quarter except one, over the five year period since 1920, this company has reported more than half a million barrels, the figures generally ranging around 600,000. In the first quarter of 1924, the million barrel mark was reached, but was not maintained. Republic has holdings in other parts of Texas, but its best production is obtained in the Hull field, Liberty County.

Texas Pacific Coal and Oil Company and Atlantic Oil Producing Company have each held fairly steady in their yield. Atlantic has production in several fields over the state, but Texas Pacific Coal and Oil's interests are confined largely to the Ranger-Breckenridge area. This company has shown a big decline in its output within the past two years.

The Simms Oil Company and the Texhoma Oil and Refining Company have each been among leading companies, during the past three years, but their production has shown noticeable variation.

J. K. Hughes, independent operator with interests at Mexia, has maintained production above the 200,000 barrel mark most of the time since 1922. His operations have widened until he now has production in a number of fields, with increasing output.

Those Who Passed

Western Oilfields Corporation, a Denver concern, was among the biggest producers in 1922, 1923, and the first two quarters of 1924, but has not appeared on the list since that time.

Tidal Oil Company boosted its Texas yield late in 1923, and through 1924, but dropped below 200,000 barrels in the third quarter last year.

Prairie Oil and Gas Company, among the leaders in 1921 and a part of 1922, was out from then until the second quarter of 1925. At the close of last year its production was about 400,000 barrels per quarter.

Among the many operators whose production dropped with the decline of the north Texas fields, is Snowden-McSweeney. This company was strong in 1921 and 1922, but since that time

(Continued on page 154.)

What Oil Means to Texas

By Kent Ridley
Staff Representative

HOW great is oil in Texas is not revealed by statistics of the one industry, for a mountain is high only as it is measured against other mountains.

Measuring oil in Texas against other sections in the oil producing column, the State ranks third, below California and Oklahoma. The investment in all branches of the industry in Texas is something over one billion and a quarter dollars, or nearly one-seventh of the nine billion dollars invested in oil in the United States. Last year the production of the Texas fields was approximately one-fifth of the output of the United States, or about 14 per cent of the total of the world.

But measured in comparison with other activities in Texas, oil ranks second only to cotton in total industrial value. In manufacture, the refineries of Texas, which refine more oil than the State produces, ranks pre-eminently first in value of manufactured products.

Historically, oil has been produced in Texas since only a few years after the discovery of the first well in the United States, but the real influence upon the State from the standpoint of development—and that influence reaches to every corner and into every activity of the wide area—dates from Spindletop in 1901. Incidentally as a coincident, oil was found in Texas just at the time when the motor industry began its demands, and the flood of oil at Spindletop which encouraged the use of oil for fuel, can be credited with providing utilization of the by-product of gasoline up to the time when cracking stills made possible utilization of greater percentages of the crude for motor fuel. Following the rapid development of fields in the Gulf Coast region along with Spindletop, production in Texas declined until 1910, when discovery was made in the northern part of the State. Since that time production has mounted steadily each year.

And each year as the productive area is extended, so is extended the influence of oil to all activities of the state, industrial, commercial and social.

Industrially

Industrially, as noted above, oil takes first rank within the state. Its influence is reflected upon many other industries. Notably upon railroads and shipping. Movement of petroleum and its products as freight amounts to more than 15 per cent of the total tonnage handled by rail lines within the State. Not only does the tonnage of oil moved exceed every other commodity handled by rail in Texas, including cotton, but the revenues to the railroads is greater because of a greater average haul. Added to that, and not included in the percentage figures above, are the hundreds of tons of oil field machinery and supplies handled by the railroads.

What is true of rail movement is even more apparent in shipping. Since oil development in Texas have been built the ports of Port Arthur, Beaumont, Orange, Houston, and Texas City, the principal business of which is oil. Port Arthur, Beaumont, Texas City and Houston, with their refineries and pipe line terminals, particularly are busy with the handling of oil, export, import and coast wise. Whether the deep water is responsible for these developments or the oil development is responsible for the ports is perhaps open to question, but the fact is that they have been developed together.

Other industrial development associated with the oil industry is the establishment within the State of a substantial manufacturing industry in oil supplies. Numerous prosperous factories with large pay rolls are devoted entirely to the manufacture of oil field machinery in Texas.

Commercially

Commercially the oil industry turns loose in Texas in payment of wages some $250,000,000 each year. As much again is paid to land owners for leases and bonuses. Directly into the State treasury in gross production taxes is paid more than $7,000,000 annually, not to mention the ad valorem taxes which are paid in the several counties upon valuations the same as other property, much of which is increased in value through its association with oil.

What this money means to the commercial life in Texas is exemplified in such progressive cities as Wichita Falls and Port Arthur, towns built almost entirely by oil. Practically every other city in the State shows evidence of the prosperity of the oil business. Fort Worth, Houston and Dallas particularly are cities whose growth has been largely associated with oil, both through the direct influence of the oil companies and through the wealth that the industry has shed upon land owners.

Banking growth in Texas has been largely influenced by the money which oil has brought. Operating strictly on a cash basis, money flows into and out of the banks at all season, in contrast to the older conditions under strictly agricultural development when the money ebb and flow was seasonal. This same change in conditions has been reflected in the business of the railroads and in all commercial lines. The oil industry operates 12 months in the year and carries the State along with it.

Socially

Socially oil has brought to Texas the advantages of a well paid personnel. Not only has it established a high standard of living for its own and associated workers in the State, but payments of bonuses and lease rentals to land owners has spread that influence to thousands of the citizenship, and has set up an influence for advancement within the State that reaches to every one of its far flung corners. Paying in one way or another, almost half of the total tax money collected in the State, oil is shouldering much of the burden of building schools and the roads which characterize the present advancement of society—getting people closer together and educating them to a common understanding.

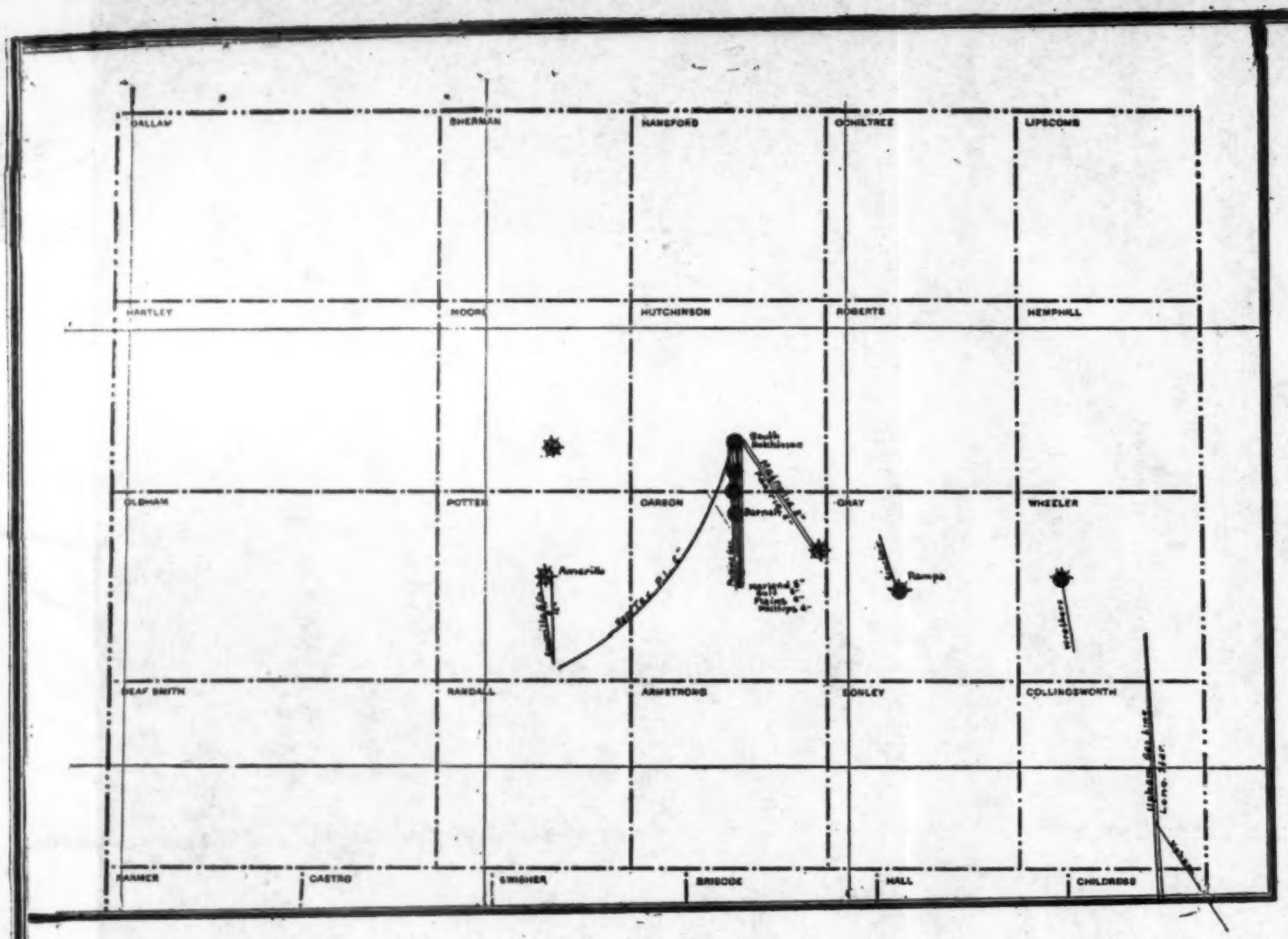
Ownership of the State University of a vast area in Western Texas upon which is one prolific oil field and undetermined and unlimited prospects for more, has given the people of the State a direct and everlasting interest in oil, as the royalties go to an endowment to exist for all time.

Politically

Politically oil has been a factor in the State. But the politician talked the loudest about oil when oil was least known in Texas. Now that practically every community is enjoying a share of oil's prosperity, its potency as a political stimulus has waned. Time was when the cry "Standard Oil" would rouse the citizenry from the cracker barrels at every cross roads, but now the cry is unheard because the erstwhile hearer is over in another county in an automobile he bought with his lease money. The populace will not rise to the cry of "Wolf, wolf!" when the wolf has given the people the meat off of its bone.

So much does oil mean to Texas that one almost can visualize the pipe lines of the oil industry as the arteries through which pulses her life blood. And at every pulse it gives out prosperity. Oil brings to this State from every corner of the earth where commerce reaches, wealth which is being expended in hastening the development of an empire which is inviting millions to come and dwell in peace and plenty.

Potentially the development of Texas' oil resources are scarcely touched. Geologists have named this as the store house of vast measures of crude petroleum. Far flung as are the fields, only a fraction of the territory has been touched.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COLLINGSWORTH
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SWISHER
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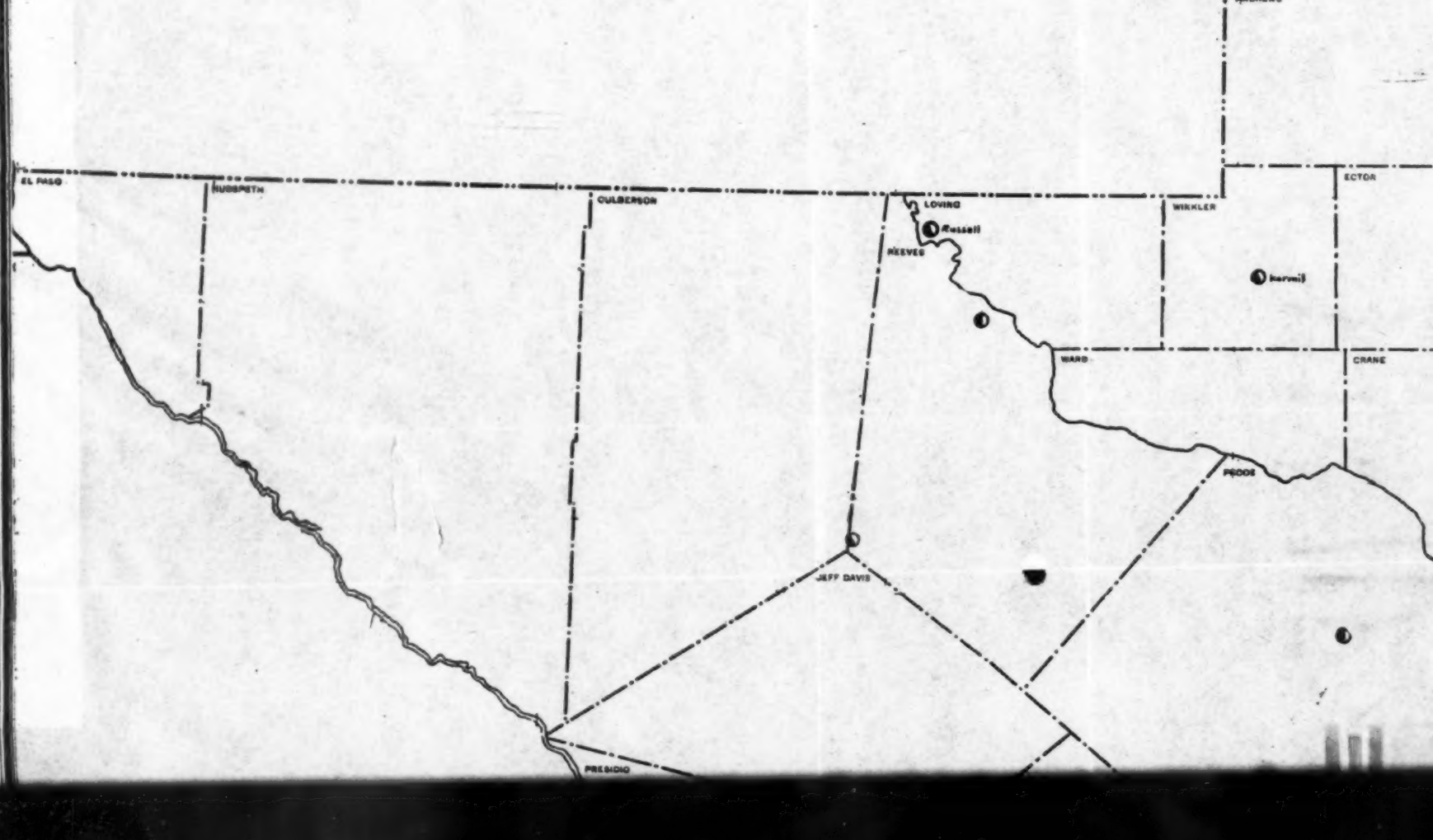
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MC CULLOCH
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LLANO
SUTTON
KIMBLE
WARDMAN
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FOARD
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YOUNG
JACK
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MILLS
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Burkburnett
Electra
Iowa Park
Texhoma
K.M.A.
Panther
Wilmot
Sunshine
Henrietta
Nimrod
Graham
Bryson
South Bend
Bunger
Ivan
Dalton
Cook
Ibex
Caddo
Strawn
Hanan
Eastland
Olden
Baird
Desdemona
Cross Plains
Pioneer
Sipes Springs
Blake
Cross Cut
Morris
Brown Wood
Santa Anna
Mt Gee
Sterling
San Angelo
Big Lake
Hurdle
Powell
Woolbrook
Lone Star
Santa Fe
Gulf
Texas
Panhandle
Burkburnett
Electra
Iowa Park
Texhoma
K.M.A.
Archer
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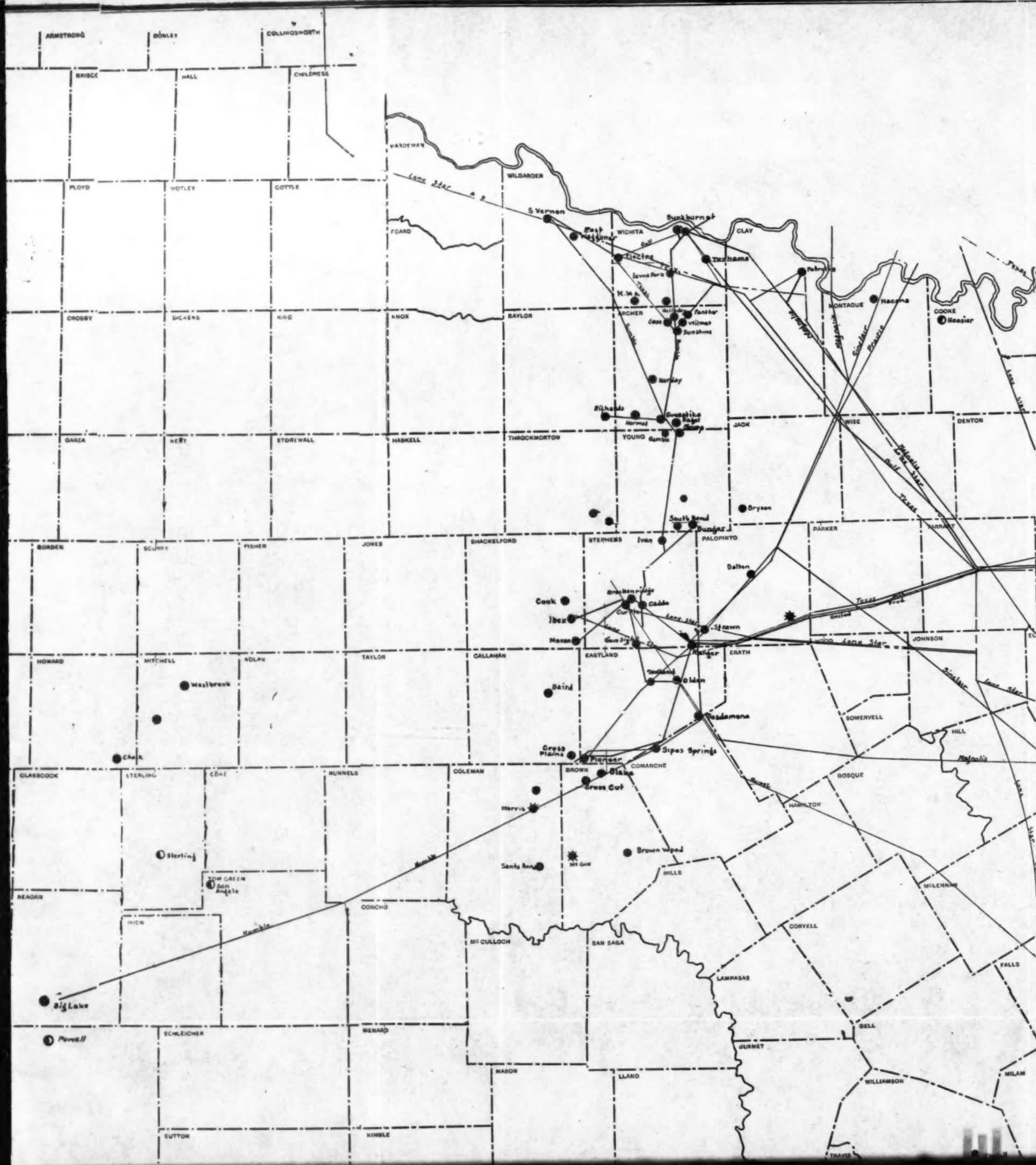
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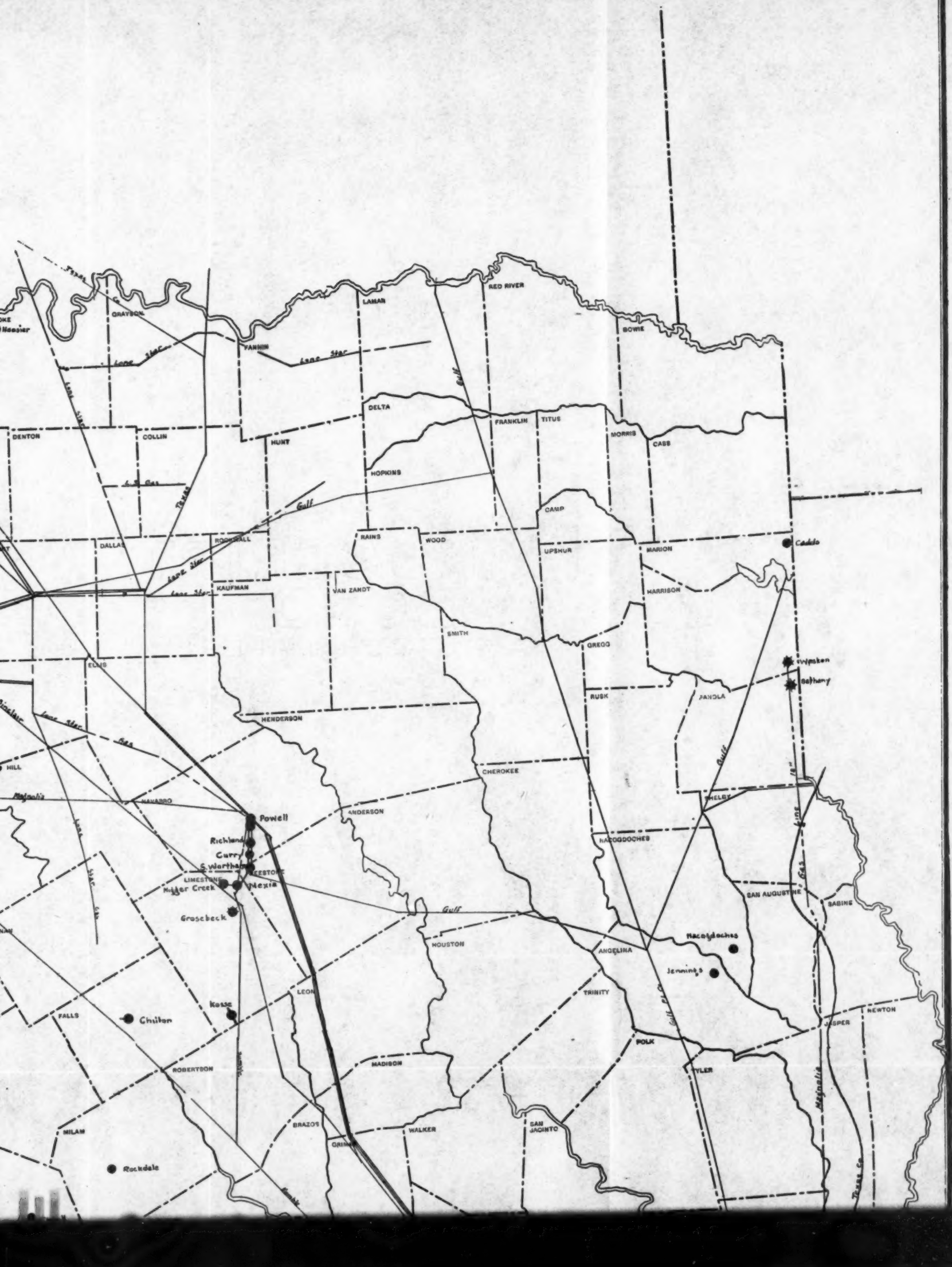
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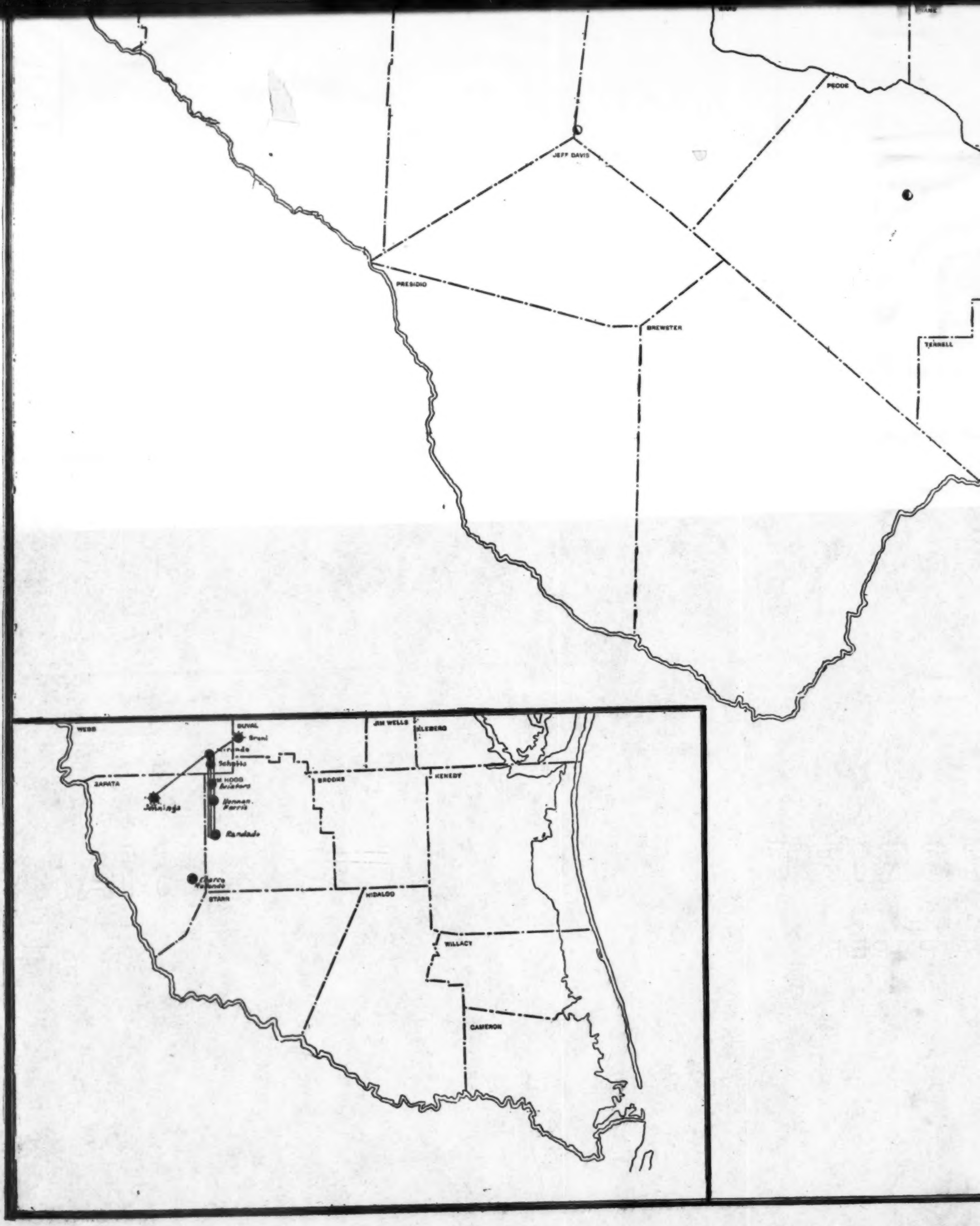
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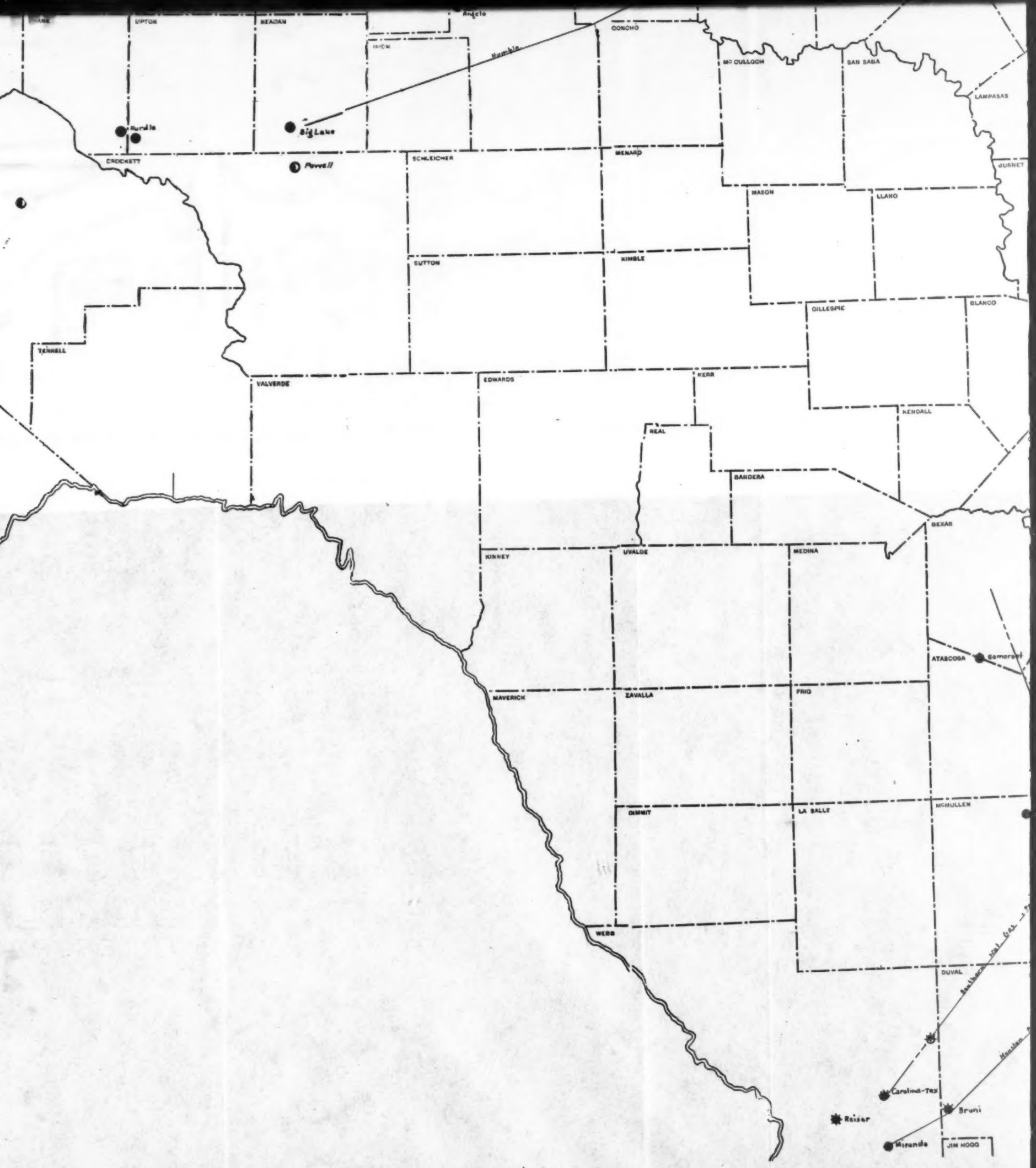
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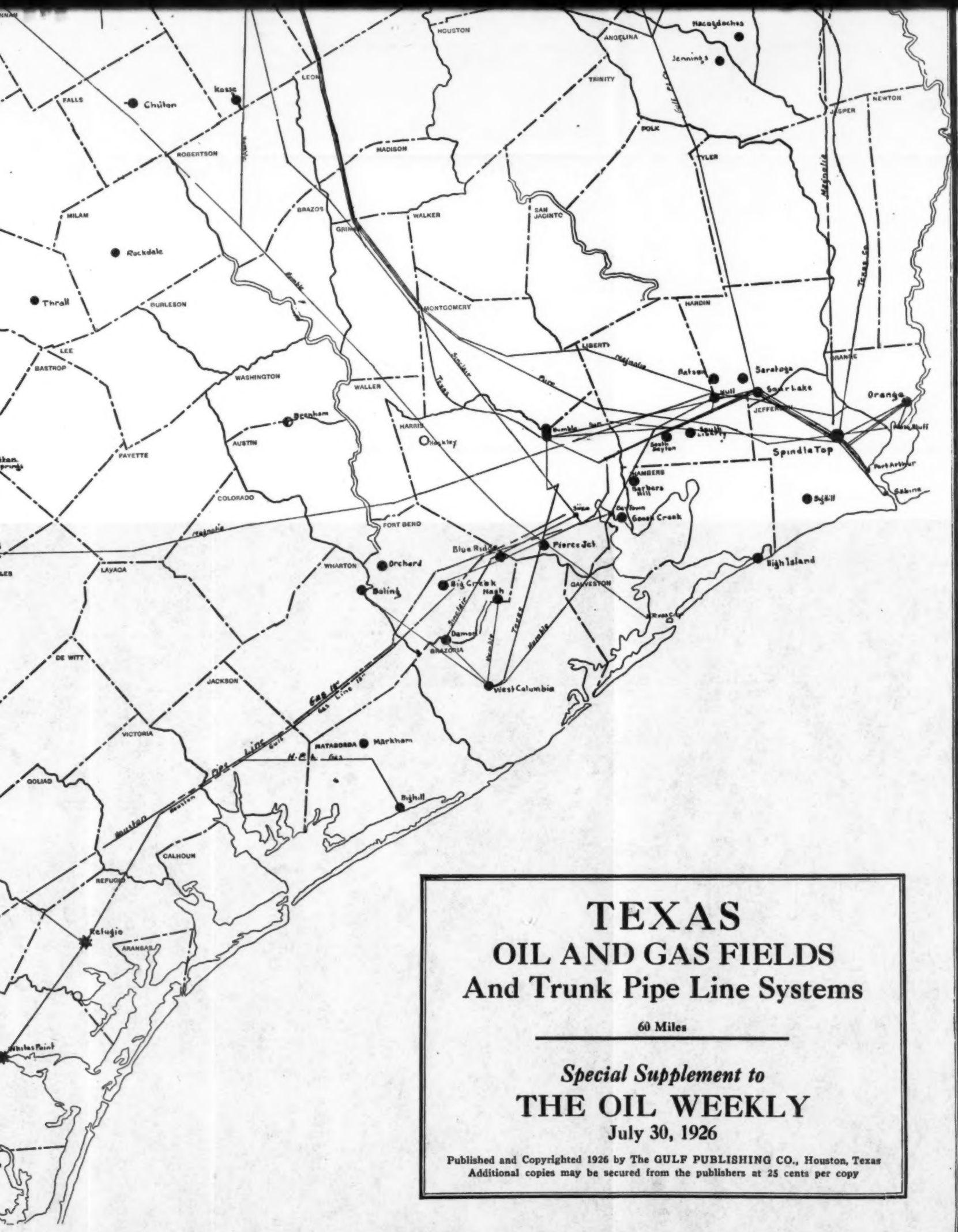

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Special Supplement to

THE OIL WEEKLY

July 30, 1926

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Texas Fields Produce Many Grades Of Crude Oil

ANY discussion of Texas crudes should be prefaced with the statement that few generalities can be made on the subject. The crudes vary so widely, oftentimes even in the same field, that it is impossible to put them in a general classification and say that a certain grade of crude holds throughout an entire section. The truth is that each field in the state is characterized by more than one grade of oil, a fact which holds in 99 out of 100 instances.

For general purposes, however, and to give a working basis, it might be said that the oil produced in North and West Texas is distinctly different from that found in the Gulf Coast; classified roughly, North Texas produces light oil, while heavy crude predominates in the coast. This statement has to be qualified, though, for now there is enough light oil coming from Gulf coast pools to justify a posting on this product. It is a fact, though, that production of heavy oil in the coast territory is many times that of the lighter grades.

North Texas Crudes

North Texas is usually included in the area commonly known as the Mid-Continent, which comprises, besides North Texas, Northern Louisiana, Arkansas, Oklahoma and Kansas. The crudes found in North Texas are of comparatively high gravity and yield by distillation rather large proportions of gasoline.

Some of the oils from this area are valuable for the lube stock which they contain.

The combined gasoline yield from straight run and pressure distillation determines the value on North Texas crude. In many instances the percentage of gasoline that can be obtained by straight run is above 30 per cent. By the application of pressure then the yield can be increased to more than 60 per cent.

North and West Texas crude is of paraffine base. The paraffine is not generally troublesome, but in a few instances it does present problems. Most of the production obtained from the Texas Panhandle congeals at about 50 degrees F., and will not flow through pipe lines below that temperature. This situation has been under consideration by leading chemists and chemical manufacturing concerns this country. Various experiments have been made with chemicals to lower the congealing point, but up to this time nothing definite has been accomplished.

Gulf Coast Crude

By virtue of the peculiar geological conditions which obtain in the Gulf Coast area, properties of the crudes found there vary more or less. The pay sand bodies are rather small in size and are lenticular in position. Wells drilled comparatively close together, and comprising what might very well be called one field, may be producing from very different formations.

Some of the crudes produced in the coastal region contain gasoline and paraffine wax, some contain no wax but an appreciable quantity of gasoline, while others contain neither wax nor gasoline.

In a general way, it might be said that the gravities of the so-called true Gulf Coast oils are comparatively low. Of 68 samples collected by one group of investigators only five had gravities above 30 degrees Baume. However, during the past spring several new discoveries of light oil have been made, and there is enough of this product being produced in the coast now to warrant a posting on "Gulf Coast Light Oil" by all the major purchasers.

This oil ranges from 30 to 41 gravity. Recently the Gulf Production Company completed a 5000-barrel well of 41 gravity oil at Big Creek, and the gasoline content of this oil is around 30 per cent. Gulf Coast light, as now classified, begins at 25 gravity and goes through 40, bringing about the same price as Mid-Continent light crude.

Comparative value of this crude in relation to Mid-Continent oil is high. Its gasoline content compares favorably with light oil produced in North Texas and Oklahoma, and purchasers have been quick to bid for it. Already Gulf Coast light is a competitor of the Mid-Continent product. The relatively limited supply is the only factor to prevent this crude having a direct influence on the Mid-Continent market.

"Regular" Coastal Crude

Grade "A" coastal crude runs about as follows: Viscosity, not less than 100 seconds at 100 degrees F. Saybolt; sulphur, not over four tenths of one per cent; Beaume Gravity, not over 25 at 60 degrees F.; cold test distillates having a viscosity of 1000 seconds at 100 degrees F. shall not be over five dedegrees F.

The bulk of coastal production comes within this classification with gravity between 21 and 25. There is a certain amount of production which is neither classed as light oil nor meets the standard for grade "A" that is called grade "B." Much of thi soil is used for fuel and is generally sold at a flat price per barrel.

Grade "A" has high lubricating content and is used for making lubricating oils with zero pour test.

Until this spring the coastal market has always been determined on the basis of grade "A" crude but with the discovery of light oil in the coast, grade "A" has become of secondary importance, giving its dominant position to the lighter crude.

It should be mentioned, however, that Gulf Coast light oil is more or less "freaky." Its characteristics vary, and no two of the light wells produce exactly the same kind of oil. Before this spring, this freak nature of the light oil prevented much enthusiasm for it. When a light oil well would be found its output generally went begging. The situation is reversed now and whatever weakness is to be found in the market exists in the heavier oil.

A good deal of sulphur is encountered in coastal oil, which makes refining both difficult and expensive. All the major buyers specify the sulphur content allowable in the different crude classifications. It might be mentioned, too, that the specifications of the different companies are not exactly the same.

Gulf Coast crudes are frequently spoken of as of an asphalt base, and yet this is not strictly true if it implies that Gulf Coast oils are necessarily high in asphalt content. The fact of the matter is that not a few Gulf Coast oils have a carbon residue scarcely higher than many typical paraffine base oils.

Typical Gulf Coast oils are exceptionally napthenic, that is, the naphthene compounds predominate.

Southwest Texas

Throughout the section known as Southwest Texas, heavy crude predominates. The Laredo district has the biggest output of this section and most Laredo crude is between 21 and 24 gravity. It is high in gas oil and lubricating stock. A resume of the contents of Mirando crude showed lubes, 27 per cent; bottoms 10 per cent; slop, 2 per cent, and gas oils, 61 per cent. The gravity was 21.1 Baume, flash 210, fire 231 F., viscosity, 81/100, cold test, zero, free sulphur, .120 per cent, and b.s. and water, .1 per cent.

Early in July the first big well of light oil was discovered in the Laredo district. This was the Carolina-Texas producer drilled by the Associated Oil Company. Its yield was about 34 gravity, and was very high in kerosene content, with no gasoline.

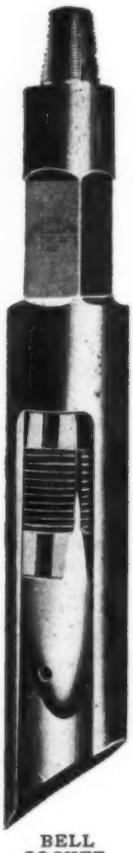
Just as in the Gulf Coast, there have always been a few scattering shallow wells in the Laredo fields that produced high gravity oil, but these have been negligible. Magnolia has one small lease in the old Schott pool that produces crude of about 44 gravity. This group of wells might be called a freak, though.

In the San Antonio district light crude predominates. The output of Somerset is light with high gasoline content and is used by the Grayburg refinery at San Antonio to make most of the gasoline sold by that company. Slight production of very heavy crude is obtained in the Ina field, Medina County, but this yield is too small to be of any importance yet.

Luling differs very little from Mirando crude in gravity, but does not have as much gas oil content. Average gravity at Luling is 22 plus, with a gas oil content of about 30 per cent. The gasoline content in one analysis showed to be 2.5 per cent; naphtha, 7.5 per cent; kerosene, 7.5 per cent; gas oil, 30 per cent; lubricating stock, 33 per cent, and flux, 17.5 per cent. Luling crude is valued highly as a fuel oil, much of the field's output having been bought by the Southern Pacific Railroad to burn in its locomotives.

DOUBLE SWEDGE WITH BIT

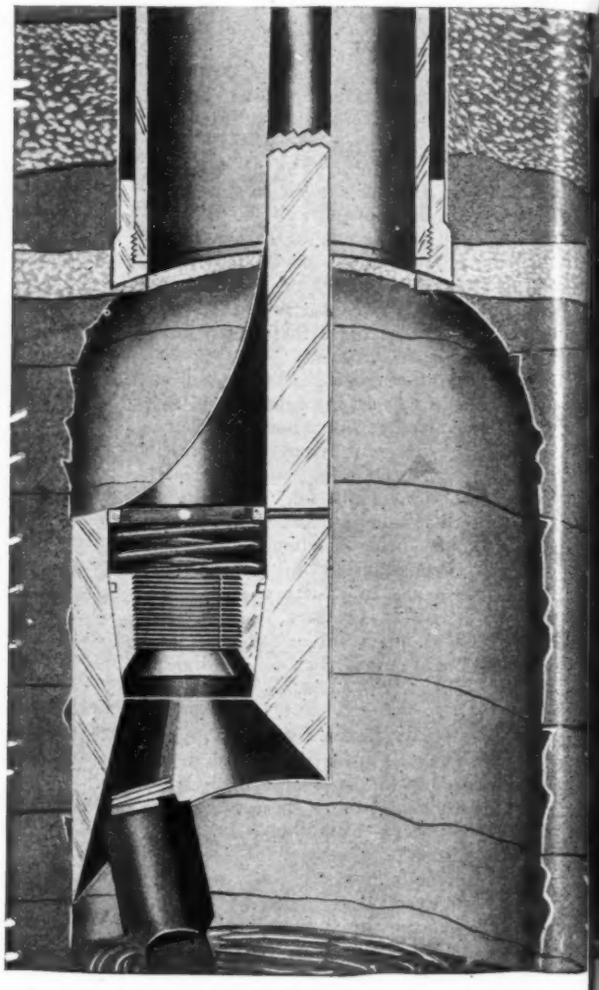
WIRE ROPE KNIKE



BELL SOCKET SPEAR

JAR UP AND JAR DOWN CASING RIPPER

JAR UP AND JAR DOWN CASING RIPPER



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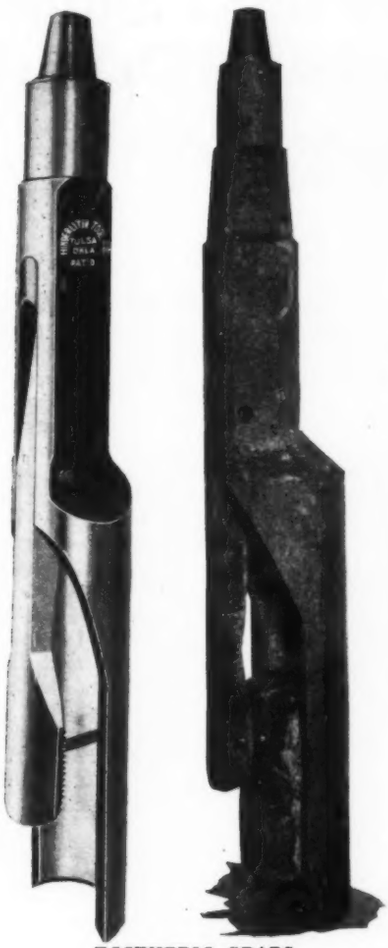

ECCENTRIC GRABS

KICK-OFF TOOL

SLIP RING SOCKET

COMBINATION 3-PRONG GRAB AND CENTER ROPE SPEAR

SIDE ROPE SPEAR WITH HARPOON KNIKE

By HINDERLITER

MILDREN TUBING SUPPORT

HINGE TOOL WRENCH LINER

JAR RAM SOCKET AND BELL

R TOOL COMPANY

ipal Oil Fields OKLAHOMA

Few California Fields Showing Tendency Toward Revival of Intensive Drilling

However, majority of fields are confining new work to that necessary to maintain production

By Wm. V. Gross
Staff Representative

Los Angeles, Cal.—While a majority of fields in the Los Angeles Basin and in the northern section of the state continued to drift along with only that amount of field work necessary to keep settled production going, a few fields have developed conditions which indicate a temporary revival of drilling. Fortunately the new finds will provide that quality of oil which is demanded by the market.

In the southeastern sector of old Signal Hill field for instance, the San Martinez Oil Company has completed at 5215 feet a 550-barrel well of 30 gravity clean oil. This production is coming from what is believed to be a new sand, and its finding is responsible for the creation of the greatest amount of interest in the older section of the field that has been shown since the boom days of Signal Hill. On the strength of the San Martinez's fortune, the Julian Petroleum Corporation has staked out a location on the corner of State and Loma streets.

Signal Hill Has New Sand

The present well of the San Martinez interests was allowed to progress unmolested by scouts, due to the fact that every one was more or less interested at the time in developments of the California Petroleum Corporation's Bixby No. 1, and the Miller Haley outpost well, both of which were attempting extensions of the Los Cerritos area. It came, consequently, as a complete surprise.

In addition to the Julian's new location, the San Martinez Oil Company has staked out a location for Dillman No. 1, in the same vicinity with Booth 4-A, discovery well of the new sand. The location of Dillman No. 1 is at the corner of State and Newport streets.

Commercial completions the week of July 24 in the Los Cerritos extension of Signal Hill (Long Beach) numbered four, one of which rates a gusher classification in the field. This well was the Craig-Burns Oil Company's Los Cerritos No. 4, which gauged an initial of better than 1000 barrels of 22.5 degrees Baume gravity clean oil, coming from the deep sand at 4828 feet. Harry Failing, who was affiliated for years with oil operators in Texas, got a nice well when he worked over his Los Cerritos No. 1, making a deep sand producer out of it. His Los Cerritos No. 1 came in for an initial of 400 barrels clean oil from 4785 feet. Another well was added to the Long Beach municipal water plant property when A. T. Jergins brought in Municipal No. 19 for a flush of 200 barrels of 23 gravity, clean oil, from 3160 feet. In addition to his prominence in current work as Los Cerritos, Mr. Jergins played a prominent part in the exploitation of the northwest sector of the old Signal Hill field. Another completion this week as Los Cerritos was a small well brought in by the Star Petroleum Company in its Colby No. 2. Despite the fact that this well has a little more than 25 feet of producing horizon, its flush yield was only 100 barrels.

Santa Fe Springs Active

From the character of completions made at Santa Fe Springs during the past three weeks, it begins to look as though the famous old field is due for a revival of drilling. Last week, it will be recalled, Santa Fe Springs operators were surprised at the way the Associated Oil Company's Green No. 1, a work-over well, maintained its initial flow rate for more than a week. The well still is producing far beyond expectations of even the Associated. It is producing, furthermore, from the Meyer, a sand that has been considered by many to be nearly exhausted.

This week the field is all aglow with the contributions of the Bell sand, another horizon which presumably had been pretty thoroughly exploited. Out of this sand, the Bandini Petroleum Company completed its Off No. 3 for an initial of 1800 barrels. Total depth of the hole was 3870 feet. From the same sand the General Petroleum Corporation brought in its Santa Fe No. 20 from 3820 feet for an initial gauging of 500 barrels. Both wells are making 30 gravity oil, which is in great demand at present.

Offsetting the Bandini's property, the Standard Oil Company of California is getting ready to drill its South Whittier Community Property No. 19 as the first step of a protective move against the Bandini's new production. And the General Petroleum Corporation has made locations for Santa Fe Nos. 21, 22, 23, 24. What other operators holding leases in the vicinity of the Bandini's Off lease, the General Petroleum Corporation's Santa Fe lease and the Associated Oil Company's Green lease will do in the way of drilling has not been announced. But it is safe to assume they are not going to allow the above three to get all the cream production if it can be prevented.

Santa Fe Springs field is the most remarkable high gravity field in Los Angeles Basin, in total yield, in consistency of yield and in flush yield. Reopening a play in the field will further jeopardize the welfare of those organizations whose production is confined largely to the lower gravities.

Despite the fact that Huntington Beach still consistently contributes to the flush yield column in Southern California, interest in that place is held largely on account of the wildcat activities there. Of the three major tests going on, perhaps that of the Standard Oil Company of California is being watched closest. This week its Bolsa Chica Gun Club lease well No. 23 is reported to have logged some excellent showings at and above 6137 feet. Six and five-eighths-inch casing was cemented at 6106 feet, and a test of the formation at that depth may result in commercial production. The Standard has been exceedingly fortunate in its Huntington Beach projects, so much so that the field is often referred to as the "Standard's field." After adding more than 1000 barrels to its production there last week with the completion of its Huntington B-46 and B-47, the company this week brought in Huntington Beach A-31 for an initial of 200 barrels, coming from 3688 feet. Recent completions at Huntington Beach and on the outskirts of the field have been noted for their "kick," sometimes resulting in an increased yield of oil with the decrease in gas pressure which comes within a few days of completion.

Another well being closely watched at Huntington Beach is the wildcat being drilled by the Wilshire Oil Company. Contrary to methods followed by most Basin operators, the Wilshire is locating and trying to remedy water encroachment as it drills, rather than waiting until a definite total depth has been reached and then backing up to plug off the water. Total depth of this hole is 3190 feet. It will not be drilled deeper until water, which failed to be effectively shut off at 3025 with 11-inch, can be reasonably eliminated. On strength of showings made by this well, it is understood real estate prices have soared in that portion of Huntington Beach around the recently opened Seventeenth Street restricted area. Lots in this neighborhood are selling for from four to eight times as much as they were the early part of the year, according to real estate dealers.

The third major wildcat test of Huntington Beach is that of the Superior Oil Company, which is drilling below 3116 feet after having successfully effected a water shut-off with 11-inch at 2995 feet. The Superior has passed up the shallower showings and is drilling ahead in search of a deep sand, believed by some to exist in the vicinity. So far, the chances of the Wilshire and of the Superior for commercial production do not look very encouraging.

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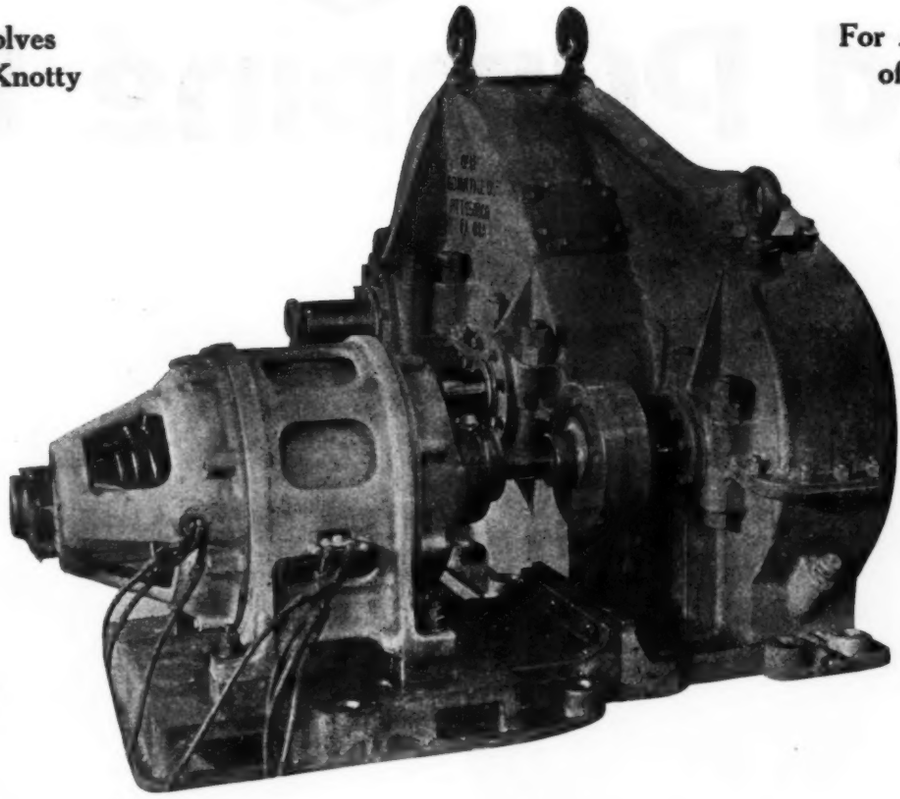

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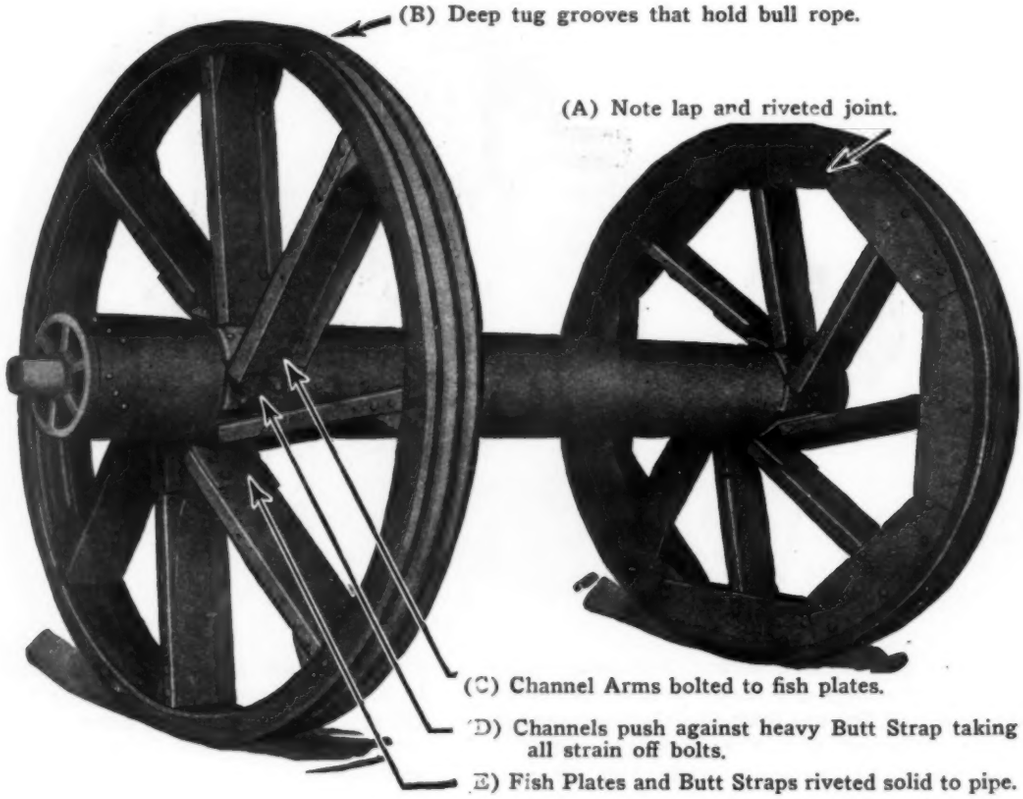
(B) Deep tug grooves that hold bull rope.
(A) Note lap and riveted joint.
(C) Channel Arms bolted to fish plates.
(D) Channels push against heavy Butt Strap taking all strain off bolts.
(E) Fish Plates and Butt Straps riveted solid to pipe.

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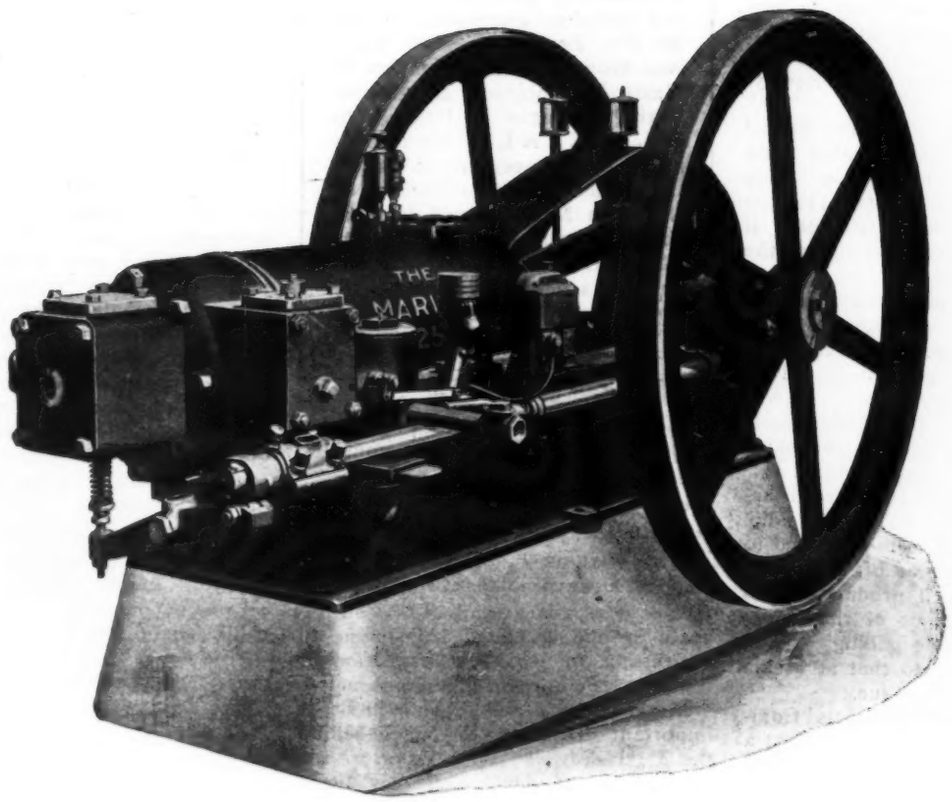

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Say you saw it in The OIL WEEKLY

Oil Possibilities Off the Main Fault

Good reason to believe that other producing structures will be uncovered up dip from Mexia-Powell fault

By Leon J. Pepperburg,

Consulting Geologist and Engineer, Dallas, Texas

When the Nigger Creek field was opened up by the Transcontinental Oil Company three weeks ago, based on a geological theory advanced by Leon J. Pepperberg, a consulting geologist of Dallas, and drilled on a structure mapped by Mr. Pepperberg, but which was brought to his attention by Heath M. Robinson, also a consulting geologist of Dallas, The OIL WEEKLY immediately asked Mr. Pepperberg to discuss the possibility of production off the main Mexia-Powell fault, as the new well upset a number of ideas formerly held. The accompanying article is the result, written especially for The OIL WEEKLY.—The Editor

SINCE the discovery of the Mexia oil field on November 20, 1920, and the seven fault line pools developed between Mexia and Powell, this region has been called the Mexia-Powell fault zone. Several attempts have been made to extend the production northeast from Powell, but to date without success. Recently an extension was made southwest of the Mexia pool by the completion of the Pure Oil Company-Stockton well No. 1.

A number of wells have been drilled east and west of the so-called main fault. These were spoken of as "inside wells," if located up dip (west) from the main fault or "outside wells," if located down dip (east) from the Mexia-Powell zone.

Wells drilled up dip from the main fault received scant attention from the oil fraternity, because it was the consensus of opinion the oil migrated up the dip to the known pools. It was assumed that since the major pools were so prolific it was unreasonable to believe the strata could contain sufficient oil to support commercial accumulations in areas near by up the dip. The major structures were supposed to act as dams which shut off migration westward beyond their productive limits, and in consequence of this widespread belief favorable geologic structures, similar in type to that at Mexia were considered of no value.

On July 8, the Transcontinental Company Rosson No. 1 was completed at a depth of 2846 feet in the Woodbine sand with an initial production of 2800 barrels. The well flowed steadily. There was no water. The corrected gravity of the oil was 39.9 degrees. Its temperature was 97 degrees.

The Nigger Creek structure on which the discovery was drilled lies 2¾ miles west of and almost parallel to the Mexia structure. A strip of territory some 50 miles in length and 2 to 5 miles in width, lying west of the main fault, which was formerly looked on with disfavor, is now considered possible oil land.

Operators conversant with the intensity of development in former Woodbine fields, the rapidity with which peak production was attained and the large acre yields won from these pools, naturally are speculating on the importance of this discovery and what effect the discovery of other fields along the new trend will have on the industry as a whole.

Presents Many Problems

This discovery presents many problems, some of which may be mentioned at this time. Of importance among the questions being discussed are: Does the major portion of the oil accumulated in the east Central Texas fault line fields migrate up the dip to be trapped at favorable structural localities, or does a large part of this oil migrate up the shattered fault plane to the strata in which accumulation is found? How large will the productive area at Nigger Creek be? Will other important discoveries be made behind the Mexia-Powell fault? What are the possibilities of developing new fields east of the main fault?

A study of conditions in and adjacent to the fault zone fields of East Central Texas, strongly suggests it is as reasonable to assume a large portion of the oil could have migrated up the fault planes from deep source beds, or across fault planes from source beds in juxtaposition with reservoir strata, as that it migrated up the dip of the strata in which accumulation is found. In all probability upward migration along fault planes, horizontal migration across faults and migration up dip, all contributed to the accumulation of pools in these structures.

All of the major pools in this region are associated with faults. Several minor shallow fields show evidence of their close relationship to faults, but unfortunately well logs covering early development were not kept properly, the available information is unreliable and for this reason much valuable data was lost. This same comment applies to dry holes drilled off the main fault during the past few years.

One comment frequently heard among oil men familiar with the major pools is the scarcity of shows of oil in the Austin Chalk which overlies the Eagleford shale. The Eagleford has all the earmarks of a source bed in fact, oil springs are common along its outcrop at certain localities. Numerous cores of Austin chalk taken from wells in the Powell field showed slight traces or no oil, even in instances where the chalk was semi-porous.

The outstanding exception to the rule is the Humble Oil & Refining Company's Ramsey "B" lease, Well No. 30, which was completed with an initial production of 500 barrels in the top of the chalk. The chalk adjacent to this well is cut by the main fault of this field. A crushed zone was developed in the chalk adjacent to the fault and undoubtedly the oil which is being produced from this restricted adea migrated up the fault plane or across the fault, rather than up the dip to the point of accumulation.

A similar conditions was observed in the Dixie Oil Company's Lytton No. 1, Bastrop County, where a good show of oil was encountered near the top of the chalk adjacent to a fault.

Lytton Springs

The production at Lytton Springs, Caldwell County, is found in an altered serpentine. This rock is found associated with the Taylor marl at about the same stratigraphic position usually occupied by the Austin chalk. The productive area is cut by a fault. Whether the source beds at this locality consist of the marls in contact with the serpentine or whether the oil had a deep-seated origin and migrated up the fault, has not been determined.

The production from the South Bosque field comes from the Buda lime.

The prolific production of the Luling field, which occurs in dolomitic limes belonging to the Edwards formation, is of Lower Cretaceous age; while the Woodbine production of the Mexia-Powell fields, which is 350 to 500 feet higher stratigraphically, is of Upper Cretaceous age. The Luling production is associated with a series of faults similar in type to those at Mexia and Powell.

The oil found in the Humphreys Oil Company's Jones No. 1, at Kosse, Limsetone County, is believed to have come from the Glen Rose member of

the Trinity group. The Trinity is the lowermost member of the Lower Cretaceous in this region. This well was drilled adjacent to a fault.

In the Mexia-Powell region, below the present Woodbine pools, the Buda, Edwards and Trinity which are possible oil bearing zones, are present. Other intermediate strata which are oil and gas bearing at some localities, and which are capable of being oil reservoirs under the proper structural and sedimentary conditions, also underlie this district.

Oil, which had accumulated in these lower strata or which was generated in beds interlocated with or adjacent to them or in beds older than the Cretaceous, could migrate up the fault planes of this region to be trapped in favorable structures nearer the surface.

Tests 4500 to 5500 feet deep will be necessary in this region to thoroughly test the oil possibilities of the Cretaceous beds.

Surface Indications

A study of the surface outcrops and well logs in the Nigger Creek district plainly showed a fault of considerable displacement with the down-throw to the west. There is also surface evidence of closure. The Woodbine sand was known to be present beneath the area and calculations indicated its subsurface elevation beneath the structure to be above the critical water level. No chemical analysis was available which assured the presence of typical Woodbine waters of the type commonly found in contact with the oil of the main fault fields. The presence of this fault has been known for about seven years. Similar structural conditions, if located along the trend of the Mexia-Powell production would have been considered favorable for the accumulation of oil in commercial quantities.

The recommendation of this structure for a test well was based on the hypothesis that part of the oil in the fault line pools migrated up the fault to the strata where accumulation is found, as against the theory that accumulation was entirely due to migration up the dip. However, one of the principal factors governing the selection of this inside structure (up dip from the main fault) was that it is situated almost directly west of and opposite to the gap between the southwest end of the Mexia field and the northeast end of the Groesbeck structure. The gap between these *en echelon* faults is virtually a syncline. This structural condition would permit oil to migrate up dip through the gap in the main fault towards the Nigger Creek structure, thus justifying a test well even if the theory of upward migration along the fault proved incorrect.

Three Miles Long

The known length of the Nigger Creek structure based on surface indications is approximately three miles. Its width is unknown. Until a number of tests have been completed, it would be folly to atempt to estimate the size of the productive area of this new pool.

There is every reason to believe other productive structures will be discovered up the dip from the Mexia-Powell fault. The wild scramble for leases along the new trend following the completion of the Transcontinental Oil Company's Rosson No. 1, and the high bonus paid for some leases, many miles distant from the discovery, indicate the confidence the producing companies have in the future possibilities of the area west of the main fault.

The possibility of developing new fields east (down dip) from the Mexia-Powell main fault is dependent on the same geologic factors which govern the accumulation in the major pools of this district. Undoubtedly this zone embraces structures which justify the drilling of test wells.

Unless the selection of locations for wildcat wells to be drilled either east or west of the so-called main fault is based on careful geologic investigation and deduction a large number of costly failures will result.

In addition to the oil possibilities of the region here discussed, the Transcontinental discovery will stimulate drilling activity along a wide belt of territory having oil possibilities and extending from northwest of Powell to southwest of San Antonio.

Nigger Creek Discovery Points Possibility of Much More Oil in Mexia Area

East Central Texas has bright future on oil production, despite removal of nearly two hundred million barrels

By H. H. King
Staff Representative

Mexia, Texas. — The East Central Texas fault region faces the brightest future from a production standpoint than ever before, although 191,642,987 barrels of crude had been recovered up to July 1 from the five fields comprising the Mexia-Corsicana district on the Mexia line of faulting. The discovery of oil in flush quantities on July 8 by the Transcontinental Oil Company on the Nigger Creek structure proves for the first time that oil production has been trapped against an inside fault lying between the Mexia producing fault and the Balcones, or main fault. Having established that production is not limited to the Mexia fault proper, the wildcatters are making ready to resume their exploration work on the inside faults, which have threatened on a number of occasions to make producing wells, but the evidence of oil was not taken seriously then for the reason that previous attempts for production had failed outside of the Mexia fault zone.

The Tehuacana fault so-called because of cutting across the town bearing such a name in Limestone County, furnished the Nigger Creek structure, and extends in an almost parallel direction with the Mexia fault, with an interval of about four miles between. Since the Tehuacana fault now has a flush field in the making, operators are taking it for granted that additional oil producing structures exist to the northeast and southwest of the Nigger Creek field, basing such opinions on the history of the Mexia fault zone in furnishing five fields of considerable production importance in the aggregate, and favorable evidence of oil in wildcats drilled west of the Mexia field proper.

The heavy development campaign now getting underway in the Nigger Creek field has expanded to the northeast and southwest of the discovery well to the extent that the producing limits of the Woodbine sand pay on this structure may be known within six weeks. Except for a few inside locations on the large tracts held by Transcontinental, Pure, Reiter-Foster, E. L. Smith and a few others, the field will be drilled out in a few months, and the rotary rigs stacked on the ground in anticipation of another discovery being made by the wildcatters now starting up.

The Transcontinental discovery literally starts the development of the East Central Texas fault region all over again, and operators have forsaken their old ideas regarding the production being confined to the Mexia fault zone, but not until this discovery well flowed pipe line oil at an initial rate of 2900 barrels daily from Woodbine sand pay at 2841-44 feet. The dis-

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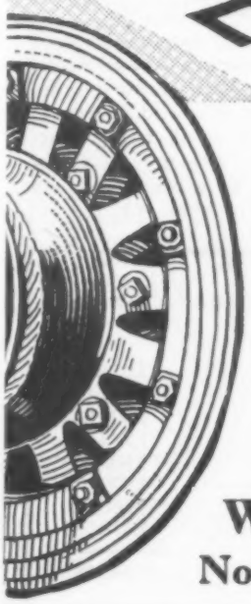

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Say you saw it in The OIL WEEKLY

The productiveness of the five fields comprising the Mexia-Corsicana district is illustrated by the accompanying table:

Field—	Date Discovered	No. Proven acres	No. Producing wells	Crude Yield per acre	Total Production to July, 1926
Corsicana-Powell	1- 7-23	2650	825	32,332	85,679,746
Mexia	11-25-20	3705	429	20,626	76,419,030
Wortham	11-22-24	715	288	25,999	18,589,366
Richland	Dec. 1923	240	102	23,186	5,564,700
Currie	Oct. 1921	375	52	14,374	5,390,145
Nigger Creek	7- 8-26	...	1	.....	.....
Totals		7685	1697	24,937	191,642,987

covery furnished as great a surprise to many of the most studious geologists on fault line conditions in East Central Texas, as did the discovery well at Mexia which produced oil and gas from the Woodbine sand horizon for the first time in Texas after always being considered primarily a fresh water bearing sand.

Prospects for Other Fields

The possibilities of one, or a group of fields being discovered by the numerous wildcats scheduled for early drilling on the series of faults known to exist to the west of the Mexia fault carries more importance to the general crude situation than the Nigger Creek field, as this field's production can and will be absorbed quickly by the six major pipe line companies now operating their lines at part capacity from the Mexia-Corsicana district.

The wildcatters appear to be more partial to the acreage lying west of the five established fields in renewing their activities in the East Central Texas district, with more partiality being shown on the acreage lying opposite the Wortham and Corsicana-Powell fields. Enough drilling has been done heretofore on the west flank of these fields to obtain perfect geological control with the drilling of a few more tests, and new discoveries could be made now with less drilling effort than heretofore, with such sub-surface information already available. The Nigger Creek field was scored on the third attempt, although one of the failures was drilled some years previous to Transcontinental's entry into the area, but since proven to be on the downthrow, or barren side of the fault. Transcontinental's first try made oil in small quantities, but was poorly completed in using second-hand casing, and offsets now starting at the same distance from the fault are expected to make good wells.

The performance of the five fields in the Mexia-Corsicana district in yielding 191,642,987 barrels of crude since the completion of Col. Humphreys' Rogers discovery well behind the high board fence enclosure in November, 1920, illustrates the prolific qualities of the Woodbine sand pay. Since the average market price of this crude has been $1.50 per barrel at the well, it is estimated that the five fields have netted the producers in excess of $287,464,480 in return for the oil taken from their leases by flowing, swabbing and pumping. A small portion of this crude has been produced within the past several years from shallow oil horizon in the Corsicana-Powell and Wortham fields, and it is due to the shallow pay in the former field that more producing wells are listed now than was the case when the Woodbine sand pay was fully developed. The shallow pay in the Corsicana-Powell field also afforded a double life for many of the deep wells, which were plugged back and casing ripped at the horizon after water had drowned out the deep stuff.

High Prices for Leases

A striking contrast now prevails within the oil fraternity regarding opinions on the productiveness of the Woodbine sand as compared to the period when Col. Humphreys' Rogers well first showed oil at Mexia. This well pioneered the oil development from the Woodbine in Texas, and was greatly underestimated in importance, while many of the larger companies refused to invade the district and buy lease protection, until the development of the Mexia field was well underway. Actual performances have since turned the tide in an opposite direction, and companies now willingly pay a higher lease bonus for acreage covering a Woodbine sand field in the fault region than in any other district east of California.

Quick returns on investments and high crude yield per acre has won the East Central Texas fault region high honors among high gravity oil fields of the world. The Mexia field went slow on development until more than a year had elapsed since the completion of the first well, but in the latter part of 1921 and 1922 the operators learned that the flush production was comparatively short lived, and speedy development was necessary to obtain a legitimate portion of the oil by natural flow. The Currie field was likewise discovered by Col. Humphreys' organization, but it did not afford sufficient acreage to permit a major drilling program. The Corsicana-Powell field came to light in January, 1923, through the efforts of the Corsicana Oil & Refining Company on the northeast end of what later proved to be the largest high gravity producing field in the country, based on a few weeks production gauges. The same group of operators that participated in the Mexia and Currie development were on hand at Corsicana-Powell, with a number of recruits from other districts, and operations went forward at a swift pace, thereby running the daily production up to the 350,000 barrel mark on a single day gauge in November of the same year of the discovery completion. The field averaged 320,182 barrels daily for the week ending November 18, 1923.

The Richland field, located between Currie and the Corsicana-Powell fields, furnished the next Mexia fault line development through the wildcat efforts of McDonald Bros. et al, but production never arose to any great heights, and the producing area was small and

(Continued on page 62.)

Tabulation giving the total crude production of the five fields on the Mexia fault up to January 1, 1926, and for the past six months is listed below:

	Corsicana-Powell	Mexia	Wortham	Richland	Currie	Totals
Prior to Jan. 1, 1926	80,084,839	73,915,522	16,835,477	5,239,910	5,215,422	181,291,170
Jan., 1926	1,018,835	449,000	357,915	67,135	29,118	1,922,003
Feb., 1926	916,709	408,374	323,539	57,769	27,564	1,733,955
March, 1926	963,383	434,774	319,440	56,503	33,204	1,807,304
April, 1926	923,535	401,720	271,745	52,560	29,465	1,679,025
May, 1926	911,345	416,070	248,025	46,350	29,170	1,650,960
June, 1926	861,100	393,575	233,225	44,473	26,202	1,558,575
Totals	85,679,746	76,419,030	18,589,366	5,564,700	5,390,145	191,642,987

New Wells Started During 1926 Ahead of Last Year's Half-Year Record in Texas

Commission has authorized drilling of wells in 150 out of 252 counties in the state

By Wallace Davis

Staff Representative

THE fact that 4721 permits were granted by the oil and gas division of the Texas Railroad Commission during the first six months of 1926 as compared with 4247 permits during this same period of 1925, brings out the steady growth in drilling activity in Texas within the past year. A condensed table has been arranged showing the number of permits granted for drilling in the separate counties during the two six month periods and at what points in the state the increase is chiefly taking place.

The table of permits reveals that during the year there has been activity in 150 of the 252 counties of the state, including wildcat activity and drilling in proven territory. That companies operating in Texas are making strong efforts to open new productive territory is seen by activity in 97 counties which do not have stable proven production, besides the wildcatting going on near old fields in counties where commercial production is steady. In many of these counties where rank wildcatting is being carried on only one test was made, and in many other counties less than five permits were granted for drilling.

The shallow pools of Archer County in North Texas caused this county to

The following table gives a list of permits granted for the drilling of new wells in Texas by counties during the first six months of 1926 as compared with the same period of 1925:

County—	1926	1925	County—	1926	1925	County—	1926	1925
Anderson	3	4	Glasscock	1	1	Nacogdoches	..	3
Angelina	1	1	Goliad	..	1	Navarro	26	122
Archer	745	746	Gonzales	4	1	Nueces	..	1
Atascosa	18	16	Gray	16	2	Newton	1	2
Austin	4	..	Grayson	..	3	Orange	16	19
Bastrop	9	2	Grimes	1	1	Palo Pinto	18	16
Baylor	40	26	Guadalupe	16	6	Panola	7	19
Bee	1	1	Hall	2	..	Parker	1	..
Bell	4	..	Hardin	48	48	Pecos	4	3
Bexar	37	27	Harris	59	84	Potter	8	3
Bosque	..	1	Harrison	13	29	Reagan	55	52
Brazoria	11	23	Haskell	1	3	Reeves	1	..
Brewster	2	..	Henderson	1	7	Refugio	15	4
Brooks	2	..	Hidalgo	..	1	Roberts	1	..
Brown	385	63	Hill	3	..	Rusk	1	..
Caldwell	52	214	Hopkins	..	2	Sabine	1	..
Callahan	348	474	Howard	6	..	San Jacinto	..	1
Carson	25	10	Hunt	3	4	San Patricio	2	1
Cass	..	2	Hutchinson	295	10	Scurry	2	..
Chambers	10	6	Irion	2	1	Shackelford	221	138
Cherokee	7	1	Jack	28	2	Shelby	2	..
Clay	37	21	Jackson	7	2	Starr	1	..
Coke	..	4	Jasper	..	2	Stephens	77	93
Coleman	134	36	Jeff Davis	1	..	Sterling	5	4
Collin	1	..	Jefferson	40	24	Stonewall	..	1
Collingsworth	1	1	Jim Hogg	48	35	Sutton	..	1
Colorado	1	1	Johnson	..	1	Swisher	4	2
Comanche	7	5	Jones	1	..	Taylor	7	4
Concho	2	..	Kaufman	..	6	Terrell	1	..
Cooke	2	4	Kendall	1	..	Throckmorton	18	36
Crane	10	1	Kent	..	1	Tom Green	1	..
Crockett	27	2	King	..	1	Travis	5	..
Culberson	..	3	Kleberg	2	2	Upton	28	1
Dallas	..	3	La Salle	1	..	Uvalde	..	2
Denton	..	1	Liberty	59	194	Waller	1	3
Dickens	..	1	Limestone	17	65	Washington	2	..
Duval	36	10	Lipscomb	1	..	Webb	85	35
Eastland	84	109	Live Oak	11	11	Wharton	56	4
Ector	6	..	Marion	16	1	Wheeler	10	4
Ellis	3	..	Martin	..	1	Wichita	481	411
Erath	3	2	Matagorda	10	7	Wilbarger	189	219
Falls	3	..	Maverick	3	..	Willacy	..	3
Fannin	1	..	McCulloch	16	2	Williamson	8	..
Fayette	1	2	McLennan	2	4	Wilson	3	5
Foard	1	1	McMullen	8	11	Winkler	1	..
Fort Bend	19	57	Medina	34	4	Wise	1	..
Franklin	..	2	Milam	92	57	Young	266	251
Freestone	2	199	Mitchell	22	20	Zapata	5	2
Frio	1	1	Montague	84	23			
Galveston	14	15	Montgomery	..	1			
Garza	2	3	Moore	7	..	Totals	4721	4247

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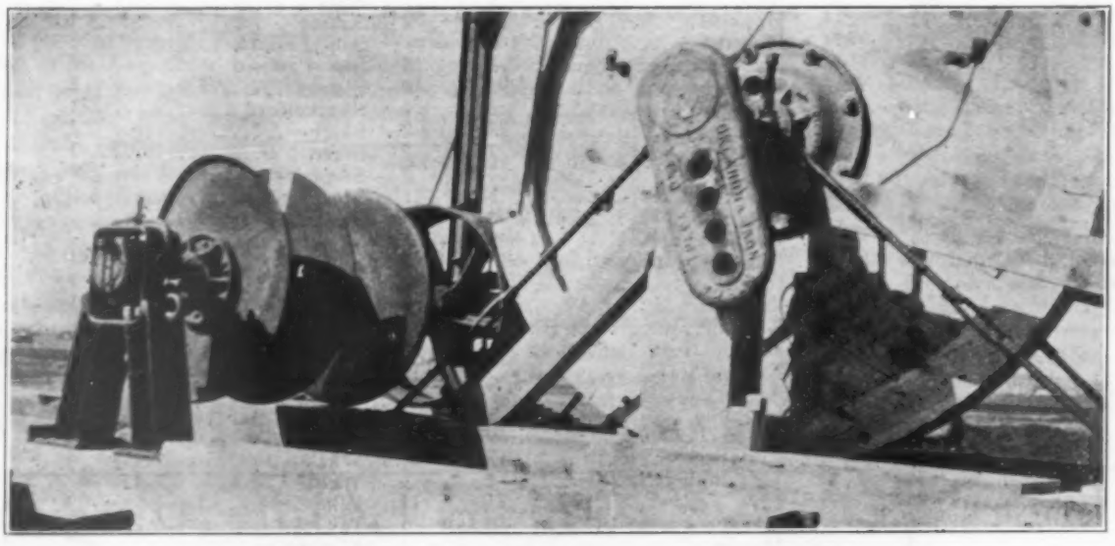

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continue to lead any other county in the state in the number of wells drilled, and although there was one permit less granted during the first six months of 1926 than for that period of 1925, the number of new locations for drilling totaled 745.

New Field Development

The greatest increases in activity during the first half of 1926 as compared with the first half of 1925 are seen in Hutchinson, Brown, Shackelford and Coleman Counties. Hutchinson County had 10 new locations made for the first half of 1925 against 295 for the same period of 1926, Brown County 63 against 385, Shackelford County 138 against 221 and Coleman County 36 against 134 new locations. Other counties making a comparative gain of particular mention were Crockett, Duval, Jack, Medina, Wharton, Milam, Montague, Upton, Webb and Wichita. Most of these gains were due to wildcat discoveries during the latter part of 1925 or early in 1926 that led to extensive drilling.

Considerable declines were shown by several counties where old fields were falling off in activity. Freestone County led any other county in falling off of activity. Only two permits were granted during the first half of 1926 as compared with 199 permits granted during the same period of 1925. Caldwell County activity fell from 214 locations to a total of 52, Callahan County locations dropped from 474 to 348, Liberty County from 194 to 59, Navarro County from 122 to 26, Limestone County from 65 to 17 and Fort Bend County permits declined from a total of 57 to 19 from one six month period to the next.

Considering the position of activity in Texas, the west and northwest sections are seen to have caused the bulk of the increase over the first half of 1925. Such gains can be seen in Hutchinson County's rise from 10 to 295 new locations granted the first half of the present year, Brown County's rise from 63 to 385 permits, Wichita County from 411 to 481, Shackelford County from 138 to 221, Montague County from 23 to 84, Upton County from 1 to 28, Jack County from 2 to 28 and Marion County from 1 to 16 as compared with the first six months of 1925.

The Laredo and San Antonio districts also show substantial increases in new locations early in 1926 as compared with that period of the previous year. Webb County permits increased from 35 to 85, Jim Hogg County from 35 to 48, Medina County from 4 to 34, Duval County from 10 to 36, and Bexar County from 27 to 37.

Less in Gulf Coast

Although there was more drilling in most of the Gulf Coast areas, there were less permits granted for drilling in this section during the first half of 1926 than for that period of 1925 due to the drop in activity in the Liberty field, which was at the height of its rush during the early part of 1925. In the leading Coastal counties there were 380 permits for new locations granted during the first six months of 1926 as compared with 495 in the first months of 1925. Liberty County permits totaled 194 during the first half of 1925 as compared with 59 during the same period of 1926.

The permit table for 1926 comes at a disadvantage when being placed against that of 1925, as probably 200 new locations were made during the latter part of June which did not have time to be recorded by the commission. Inasmuch as the greatest drilling activity Texas has ever known is under way at present the table is unfavorably overbalanced to some extent resulting from the fact that at this same period of 1925 there was little activity and therefore few permits granted late in June to go unrecorded.

Nigger Creek Points Possibility of Much More Oil

Continued from page 58

lacking in flush. The Wortham field, located between Mexia and Currie, proved to be the fastest major field ever developed, barring possibilities that the development of the Nigger Creek field may take away such honors. Wortham came as a Thanksgiving present for Col. Humphreys' organization, being the third discovery of the company on the Mexia fault line, in 1924, and reached its peak production on January 15, 1925, making 165,550 barrels on single day gauge from 73 flowing wells.

Record of Fields

Evidence of the high crude yield per acre of the five fields in the Mexia-Corsicana-Powell district is borne out by the accompanying table showing a total of 7685 acres of proven leases, with an average yield of 24,937 barrels per acre, all having been produced in five and a fraction years. The Corsicana-Powell field leads with a yield of 32,332 barrels per acre from 2650 acres, and this recovery was obtained within three years, allowing for the fact that very few wells were completed until six months after the completion of the discovery well, owing to operators spending their first efforts to the northeast and east of the first well at first.

The Wortham field has paid a quicker return to operators on their investment for leases and development, as it has produced 25,999 barrels per acre up to July, 1926, from 715 acres. However, Wortham has been dropping off fast in recent months, and the next year will see a large number of wells abandoned account of the rising water level, which is confronting the operators in all five fields, and the same condition will prevail at Nigger Creek when drainage has taken place.

The Mexia field offers a straighter production curve for the past several years than any of the Woodbine sand fields, considering that virtually no new production has been added to offset natural decline in several years, while no shallow pay is available to help maintain the daily yield. Mexia has given up 20,262 barrels per acre, with a total of 3705 acres listed as being productive, while a number of inside locations were never drilled on the larger tracts, owing to the flush being taken off before the lease owners could get around to the locations with their rotaries.

The 240 acres of producing leases in the Richland field have yielded their owners an average of 23,186 barrels per acre, with 102 wells now pumping, while the Currie field has produced 14,374 barrels per acre from 375 acres. The crude from the Currie field is of a much better grade and gravity than that found elsewhere in the fault line district, but a greater percentage of water was necessary to be handled in producing the oil.

Average 51,905 Barrels

The five fields in the Mexia-Corsicana fault zone maintained a daily average of 51,905 barrels from 1696 pumping wells during June, such being an average of 30.6 barrels per well daily, thereby indicating that these fields are earning a fair profit to their owners as a whole, and may continue to do so for a number of years. However, a big volume of water is handled daily by nearly every well, except those hemmed in near the fault proper, and the rise of the water level in the field is the yard stick measurement of the life of the wells as profitable oil producers.

Besides having produced a creditable amount of oil, the Corsicana-Powell and Wortham fields have proven very profitable fields for Humble Oil & Refining Company in manufacturing natural gasoline from the low pressure gas coming from the pumping wells, and a plant is in operation at both fields. Humble's success with the manufacture of natural gasoline in these two fields is going to lead up to a fight for the manufacturing rights at Nigger Creek, according to the present outlook.

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Today *The Larkin Line* is more complete than ever, but it still has its basis in the one characteristic we have always held fundamental—*thorough reliability in the performance of the duty for which intended.*

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Our new catalogue No. 30 describes the Larkin Line.

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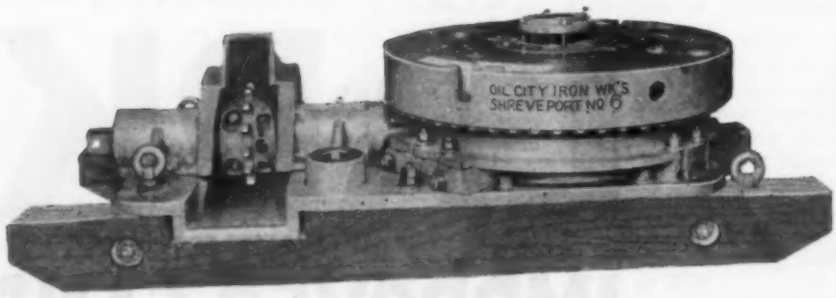

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THE outstanding features of the O. C. I W. Make and Break Rotary are: SIMPLICITY IN DESIGN, EFFICIENCY IN OPERATION, and DURABILITY.

The design of the O. C. I. W. Rotary is very simple, having only a few number of working parts. The steel table is mounted on oil bath roller bearing. The pinion shaft bushings are automatically lubricated.

The Breakout feature is very simple, yet efficient, remove top slip ring, place slips in lower slip ring, the pipe is held stationary while the table is free to rotate forward or backward thereby making up or breaking out drill stem or casing.

These features are what make the O. C. I. W. rotary the most efficient, the longest life and the cheapest operated rotary manufactured. Designed and constructed for the drilling of any depth well. The weight, complete with driver, is 7500 pounds.

O. C. I. W. Oil Bath Swivel

OUR OIL BATH SWIVEL is equipped with the finest roller bearings, each cone tested to a pressure of eighty tons. We absolutely guarantee this O. C. I. W. Swivel to stand up under any drilling conditions.

The cones and plates run in oil and are perfectly lubricated at all times. Every part is machined with the utmost accuracy from the most suitable materials.

This Swivel comes in 3-inch, 4-inch and 6-inch sizes.

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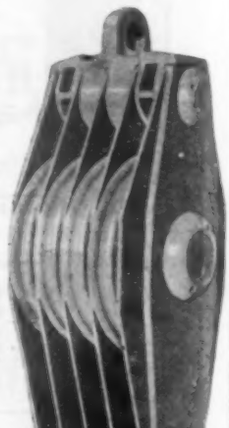
OUR Traveling Block is equipped with Roller Bearings with an outside diameter of 12". Each roller in this bearing is 1½" in diameter.

Even when in constant service this Block needs grease at intervals of not less than ten days. Each sheave is separately lubricated by means of the Alemite System, convenient and positive. An Alemite grease gun furnished with each block.

Made in 3 sizes, 3, 4 or 5 sheaves.



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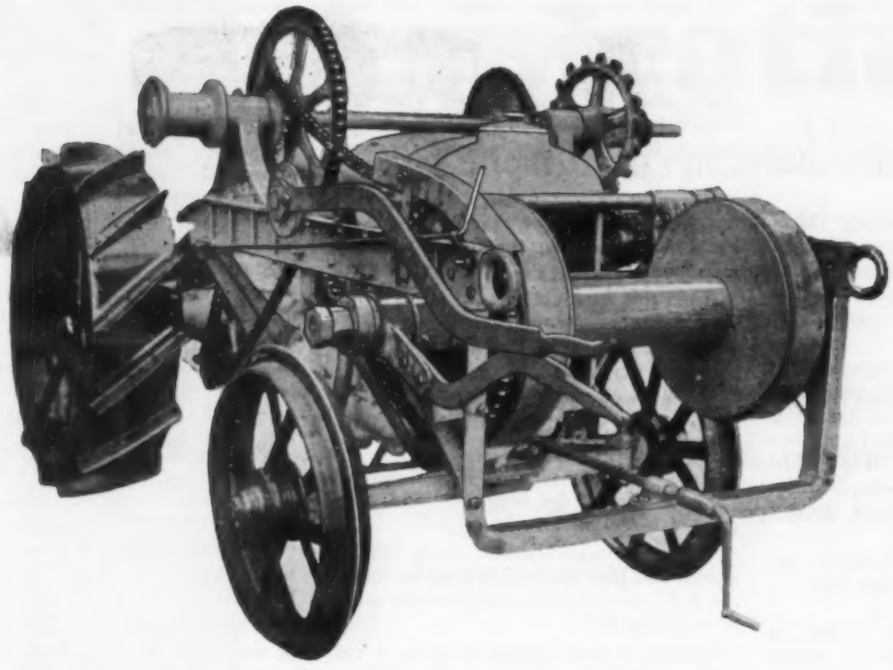

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Why Fiction Writers Go Wrong When They Write About Oil

By Grady Triplett
Staff Representative

NOW the secret is out. Writers go wrong because their authority is wrong.

When a man or a woman sits before the trusty typewriter in some New York apartment to fashion a story of oil, how can he use the lingo of the fields, when his authority for the lingo has collected it by a telescope.

In the July "Writer's Monthly" Miss Helen Chaffe Temple (or it may be Mrs. Helen Chaffe Temple) has essayed to steer the writing clan into proper channels with an article, "Local Color in the Oil Fields."

This lady evidently lives somewhere in California, which makes little difference. She could have been little more incorrect, had she been born and remained until her day of writing the article, in the Fiji Islands. Or is there oil in the Fiji Islands? For safety make it the Canary Islands.

She has set about to catalogue the terms used in the oil fields and listen to this:

"Cable Tools.—Used when drilling is done like a pile driver drills or makes hole. (Seldom used.)"

The parentheses are hers. And shades of Colonel Drake. Rheumatism should have overtaken her fingers as she reached for that first parenthesis. "Seldom used." Now the makers of cable tool joints and jars can convert their factories into shops for making sewing machine needles.

She came right back and does it over again to another time like this:

"Rotary rig.—Known as the 'rotary' because drilling is done by rotating. All wells are drilled, now, with rotary tools, except in very rare instances."

Somebody should inform this young lady that oil wells were drilled by cable tools for some 40 years before Captain A. F. Lucas turned the trick with a rotary at Spindletop. And furthermore a census of drilling today would reveal sufficient cable tool jobs to keep that type of equipment from heading for a museum of relics.

Fortunately her effort was published in a magazine for writers. So few drillers are likely to see it, which will prevent the "rope chokers" from making a stampede by mail for the handiest correspondence school to learn the art of rotary drilling.

Perhaps the several thousand cable tool drillers from Pennsylvania down into West Texas are using some other method and don't know it.

Now page the "rock hounds." This may be California for geologists but it's not United States:

"Mud Smeller—Geologist of the oil fields."

Paul Peebles can have that one.

And in the future the pumper true to type must have long whiskers and limp as the aftermath of an accident. What he shall do between the time of the accident, provided it happened in his early years, until his whiskers turn gray is a matter for the fireman to arrange. But here is his picture and offered for writers to follow:

"Fireman—Keeps up steam in the boilers. Usually a older man, or one who has been injured in the fields. An 'old man's job'."

From this it would seem that he should have a set of strong lungs and be an original "hot papa," otherwise boiler pressure may fail.

The next move may be that the drilling contractors will furnish wheel chairs for firemen.

Here is a little play on words, perhaps a bit unfair to the feminine local color painter for oil fields:

"Back-up man—Looks after chains, guides the pipe when it is coming out of the hole, and leads it into the hole when it is going it."

Imagine a man leading a string of casing into the hole. It is to be hoped it has a secret passage for coming back to the surface after the casing has been led home. Or he may be pumped back outside the casing.

Once in Oklahoma a bit came loose and it was a cable tool bit to prove they are used yet. All manner of fishing tools were tried. The hole was large, for the water string had not been set. When all else failed, a daring driller went down three times and finally attached a chain to the bit, which was retrieved.

That's a true story but the driller is in South America now, where they also use some cable tool rigs.

Miss or Mrs. Temple is right in a lot of her terms. But she strives to put the lingo of the oil fields on two pages, each of two columns, of a small magazine. And that can't be done.

Good old terms like this are missing:

"Dry hole contract."
"Pulling on the big pipe."
"Working interest."
"Headache post."
"Temper crew."
"Dog house."
"Lazy bench."
"Christmas tree."

There are a thousand more.

Here is one the lady missed and an error can properly be charged:

"Shift, or tower—Is eight hours in length. 'Tower' is a corruption of "tour of duty."

Webster does not list "Tour" as a corruption of anything. He says it is "anything done successively, or by regular order."

The information set up by this lady is for use of writers who would have proper local color in their fiction of the oil fields. But it contains something that executives should know:

"The men employed on an oil well must work quickly and accurately while they are actually working, but there are usually several hours during each shift or 'tower' (tour) when the 'roughnecks' enjoy a lull in the work while the driller is 'making hole.' During this time they 'clean up around the rig,' play a little, sleep a little. It is not usual, however, to sleep 'on the job' except when working the 'graveyard shift,' which falls between the hours of 12 midnight and 8 in the morning. If the 'boys' sleep on this shift or 'tower' when they are idle, they 'take turns' watching for the boss. If the watcher hears the boss' car he rouses his 'buddies' who are quite comfortable on the soft side of a plank. The driller does not sleep unless the well is shut down or he hands the brake over to the 'cat head man.'

"The 'tool pusher' or boss, does not care if the 'boys' sleep when there is nothing to do, but he has orders from the superintendent to discharge anyone who is found asleep."

The superintendent can take that bit of inside stuff for what it is worth and act accordingly. Perhaps the tool pusher had better be given a noiseless automobile.

What to do about those who would write of oil is another problem. Why not let some experienced driller read copy on the fiction that is written of the oil fields? But that would be a better job for the fireman, he is old and crippled and will be little missed when taken to an insane asylum.

New Axelson Building Is Nearing Completion

Los Angeles, Cal.—Work is rapidly progressing upon the construction of the large new office building on the grounds of Axelson Machine Company in Los Angeles. Practically all of the masonry and roughing-in work was completed by July 1 and the finish crews are now at work so that the structure will probably be ready for occupancy within a few days, it is reported.

As soon as the new offices are completed and the administrative force has had an opportunity to get completely settled a general housewarming is to be given and a reception day to be announced later.

Aspirations!

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Big Lake Field Responsible for Much Wildcat Drilling in Western Texas

Two companies control entire field which is being developed in conservative manner

By H. H. King
Staff Representative

San Angelo, Texas.—The Big Lake field in Reagan County is more directly responsible for the large amount of wildcatting that has led to the discovery of a number of large oil producing areas in West Texas than any other single factor. The incentive for wildcat activity in the district arises in the performance of the Big Lake field in producing a total of 15,681,300 barrels since the completion of the discovery well in May, 1923, from 107 flowing and pumping wells, thereby giving the field an unusually high yield of 146,554 barrels per well up to July 1.

The Texon Oil & Land Company, discoverer of the field, and the Big Lake Oil Company are in control of the entire producing arceage, with a wide margin of leases surrounding the productive area as proven. This field has a total in excess of 4,000 acres proven for high gravity oil production, and not one single dry hole has been completed within the field proper, except in making tests of the upper pay at the 2440-foot level, which has been found near the property lines of the two companies.

The Big Lake field is the first of a major type in the Mid-Continent to be developed on an extremely conservative basis, due to the control being in possession of two companies, and daily production has been restricted to contracted sales of crude over long periods. The daily production was allowed to run up to a peak level of 41,508 barrels on September 1, 1925, from 50 flowing and pumping wells, but since this date the output of the field has been maintained slightly above 30,000 barrels daily by timing the completion of new wells to offset the natural decline of the older producers.

Acreage Ownership

The bulk of the proven acreage is held by the Big Lake Oil Company, which is capitalized at $4,000,000, with one-fourth of the stock owned by the Texon Oil & Land Company. The former company has several hundred locations in the Texon, or main pay at the 2900-3000 foot level, awaiting the drill, and was credited with having produced a total of 9,130,460 barrels up to July 1 from 62 producers. The Texon Oil & Land Company produced 6,550,840 barrels between September 1, 1924, and July 1, 1926, with a total of 45 flowing and pumping wells.

Economy in development work and operation of wells has been accomplished to a marked extent by the two concerns, due to the fact that the usual rush for flush production was carefully avoided, while boom prices on materials and labor were never encountered. Modern methods for conserving the pressure on the sandy lime pay were adhered to, with the result that wells have been kept on natural flow over a longer period.

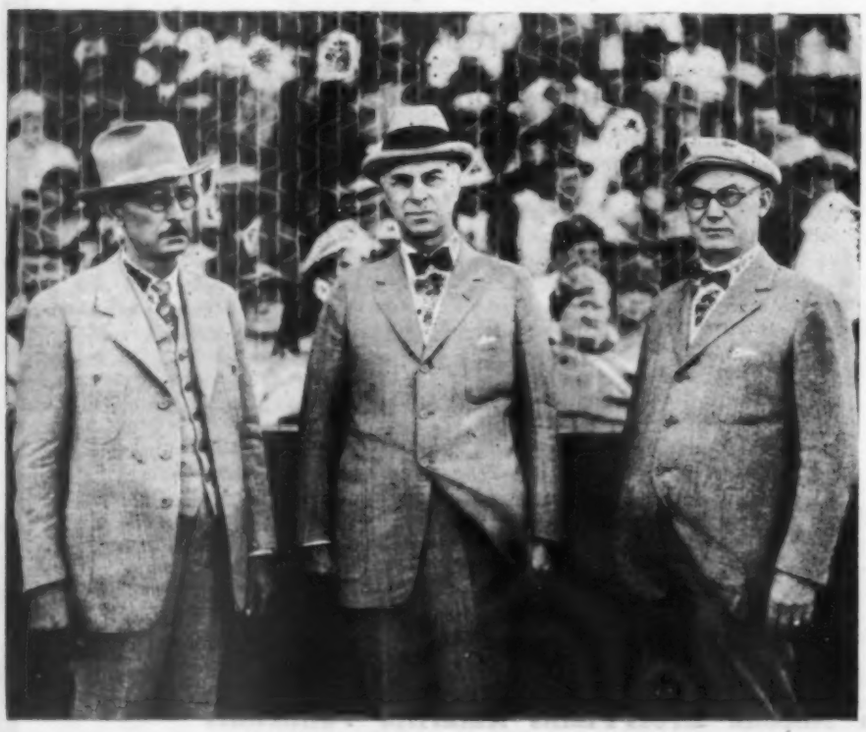
Diligence on the part of the officials of the Big Lake and Texon Companies in protecting the pressure in the field has paid big dividends on lifting costs for crude produced, and most of the oil has been obtained at an average lifting cost of 5 cents per barrel.

University Land

The University of Texas is owner of the fee land on which the Big Lake discovery well was drilled and has received one-eighth of the total oil produced. The royalty oil and that of the two producing companies is being sold on contract at a price based on the average Mid-Continent posted gravity scale, and about 30,000 barrels daily is being transported from the field via Humble's 8-inch line direct to the Gulf Coast, while that produced in excess of pipe line capacity moves out in tank cars. The Big Lake and Texon Company contracted in November, 1924, with the Marland Oil Company to sell the latter company 20,000 barrels of crude daily for the life of the field at the average Mid-Continent price. A maximum of 20,000 barrels daily must be delivered on this contract as long as the production is available. Marland then organized the Reagan County Purchasing Company, Inc., to take over this crude contract, with the Big Lake and Texon Company holding 49 per cent of the common stock. Later the contract was transferred to the Humble Oil & Refining Company, which pays the Reagan County Purchasing Company 20 cents per barrel for gathering the crude, and delivering same to Humble's pump station and tank farm at Kempner, a nearby point.

The Big Lake Oil Company has not drilled up one-half of its proven loca-

(Continued on page 96.)



The third anniversary of the discovery of the Big Lake field in West Texas was celebrated in May by the officials of the Big Lake Oil Company acting as host to a large gathering of friends, employes and citizens residing near the field with a big barbecue. The above photo of Levi Smith, president, Big Lake Oil Company (left); M. L. Benedum, director of the Plymouth Oil Company (center; and John L. Kirkland, director of the Big Lake Oil Company, was taken shortly after partaking of the barbecued beef and chevon.

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We do not contend that it is an absolute impossibility to break off the pin on a Bridgeport Hychrome Drilling Bit, but we do claim that a year's test under the hardest conditions possible to find have proven our contention that it is very, very unusual for it to do so—so unusual and unlikely, in fact, that we are willing to give you a written guarantee on the pin of every Hychrome Bit you buy.

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The Subsurface Geology of the Big Lake Oil Field[1]

By E. H. Sellards and Leroy T. Patton

ABSTRACT

The paper is based on the results of the microscopic and mineralogic examination of more than one thousand samples taken from different wells in the field at varying depths from the surface. The results of these examinations were used to correct and supplement drillers' logs and a study was made of the field by use of both classes of data.

The formations are found to belong to the Permian, Triassic, and Cretaceous systems. They are described in detail and a generalized geologic column presented. It is shown that in the majority of cases the oil occurs in an oolitic dolomite, and that in all cases it occurs in strata closely related to this dolomite. The oolitic dolomite is found to have certain definite characteristics by which it may be identified in dry holes as well as in producing wells, thus furnishing a reliable and easily identifiable key horizon. It is shown that the formations contain large amounts of anhydrite, which occur up to within short distances of the producing horizon, and these deposits of anhydrite are invariably wrongly identified by the drillers as "lime" and mapping of subsurface structure by using the top of the "lime" as shown by the drillers' logs is more or less unreliable, especially in territory where no production is found. The structure of the field as shown by mapping on the oolitic dolomite as identified in well samples is discussed.—Reprinted from the bulletin of the American Association of Petroleum Geologists.

THE oil field which this paper describes is located in the southwestern part of Reagan County, Texas (Fig. 1). The discovery well in this field is University Well No. 1 of the Big Lake Oil Company (formerly University Well No. 1 of the Texon Oil & Land Company, and also known as Santa Rita No. 1). This well was brought in on June 5, 1923, with a reported production of 80 barrels per day. About a year elapsed between the completion of this well and the completion of a second well, University No. 2, which was brought in February 23, 1924. Approximately a year late, March 1, 1925, there were seventeen producing wells in the field with an average daily production for the field of 11,500 barrels. On December 31, 1925, there were 74 producing wells, the production on this day being 32,317 barrels. The average production per well per day for December, 1925, was 440 barrels. The total gross production in the field to January 1, 1926, was 10,060,330 barrels. The depth to production approximates 3000 feet. The oil is of a gravity approximating 39 Baume. The location of wells is shown in a general way on the accompanying sketch map (Fig. 2).

As this field is located on university land, the bureau of economic geology of the University of Texas established a field laboratory at Big Lake, Reagan County, August 15, 1924, for the purpose of collecting and studying samples. This laboratory, which was in charge of the writers, was maintained until November 15, 1924, after which time well samples were collected by a representative of the university, and the work of examining samples continued at Austin. Through the corutesy of the Transcontinental Oil Company, the junior author was also permitted to study several hundred additional samples from this field. In all, over one thousand samples from various wells were studied. In addition to these, use has been made of a number of other samples described in the subsurface laboratory of the bureau by other members of the staff. The data thus obtained have been used to correct and supplement drillers' logs.

The writers wish to express their appreciation of the courtesy of the Big Lake Oil Company, the Texon Oil and Land Company, and other operators in the field for furnishing samples and data concerning the field and for permission to use information obtained in connection with the examination of the well samples. Mr. L. G. Graves, petroleum technologist, University of Texas, stationed at Best, Texas, has supplied the data on production.

The Geologic Section

The geologic section in the Big Lake oil field includes formations of the Comanchean, Triassic, and Permian systems. A graphic representation of the section is given in Figure 3.

The Comanchean

The Comanchean at this locality consists of from 200 to 400 feet of limestones, including the Georgetown, Edwards, Comanche Peak, and Walnut formations. Underneath these limestones are basement sands varying from 100 to 200 feet in thickness. The average thickness of the Comanchean, as indicated in the generalized section, approximates 500 feet.

A diamond drill core passing through the Cretaceous at a locality about four miles west of the field was examined by Dr. T. W. Stanton who has reported as shown below.

Fossils from diamond drill core from the Texon Oil and Land Company well

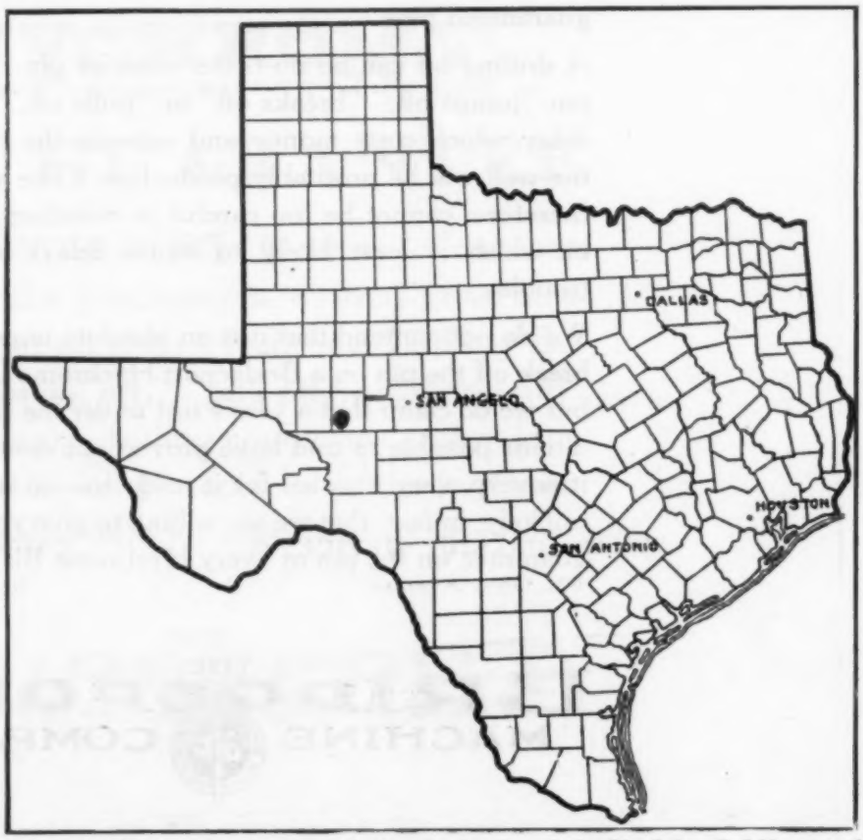

Fig. 1.—Sketch map of Texas, indicating the location of the Big Lake oil field, west of San Angelo.

[1]Published by permission of the director of the bureau of economic geology of the University of Texas. This paper, read at the March 1925, meeting of the Association was returned to the authors for adjustment of certain of the illustrations, and owing to an oversight on their part was not submitted for publication until February, 1926. No revision has been undertaken other than in the structure map, which has been added to by including wells drilled to January 1, 1926. Total production to January 1, 1926, is likewise included.

Bureau of Economic Geology, Austin, Texas.

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Lucey Chrome Steel Fishtail Bits
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on Section 6, Block 2, southwest Reagan County, Texas, collected by W. B. Lang, 1923, including a few specimens collected by T. W. Stanton.

Depth in Ft.	Fossils observed
40 to 50	*Ostrea* or *Gryphaea* sp., small specimens. *Protocardia* sp., large fragment.
50 to 60	*Ostrea* sp.; *Exogyra*, fragment of an upper valve of an undetermined species; *Pecten texanus* Roemer?; *Turritella* sp.
75 to 85	*Ostrea* or *Gryphaea* sp.; *Requienia* sp.; *Nerinea* sp.
100 to 112	*Pecten?* sp., coarse ribbed form; *Nucula?* sp.; Wood?, imprint.
120 to 125	*Nodosaria* sp.; Corals, slender branching form; *Grammatodon?* sp.; *Leda* sp. *Sphaera?* sp.; Solenid?, small slender shell with fine radial sculpture on posterior end; *Corbula* sp.; *Dentalium* sp.; *Turritella seriatum granulata* Roemer?; *Neritina*, several sp.; *Fusus?* sp.
137	Foraminifera, number undetermined specimens probably mostly Miliolidae. *Pecten* sp.; large, coarse-ribbed.
153	Undetermined small pelecypods; *Nerinea* sp.
186 to 188	*Ostrea* or *Gryphaea* fragments; *Lima?* sp.; *Cyprimeria?* sp.; *Lunatia?* sp., small cast.
250 to 257	*Exogyra texana* Roemer; *Lima* sp.; *Protocardia?* sp.

[2]Personal communication to the bureau of economic geology, University of Texas.

The fossils from this drill core are from depths between 40 and 257 feet and all belong to the fauna of the Comanche series. The lots from depths of 186-257 feet represent the fauna of the Comanche Peak and Walnut, and those from between 75 and 153 feet belong to the Edwards fauna. The lots from higher beds, 40-60 feet, probably also belong to the Edwards fauna, but in the absence of determinable diagnotic species there is a possibility that the basal part of the Washita group is represented in the well, though I do not consider this probable.

Dr. J. A. Udden and I collected fossils from near the top of a mesa 100 feet high which lies a short distance south of the railroad at the Santa Rita oil well, four miles east of the well from which the drill core was taken. The limestone capping of this mesa would ordinarily be called Edwards limestone, and the fossils also are such as have in the past been called Edwards types, but they belong to the faunal assemblage which near the mouth of the Pecos and on Devil's River is found in the upper 100 feet of Udden's Devil River limestone and above fossils that are characteristic of the Georgetown limestone. I am therefore classifying this rock as of Georgetown age.[2]

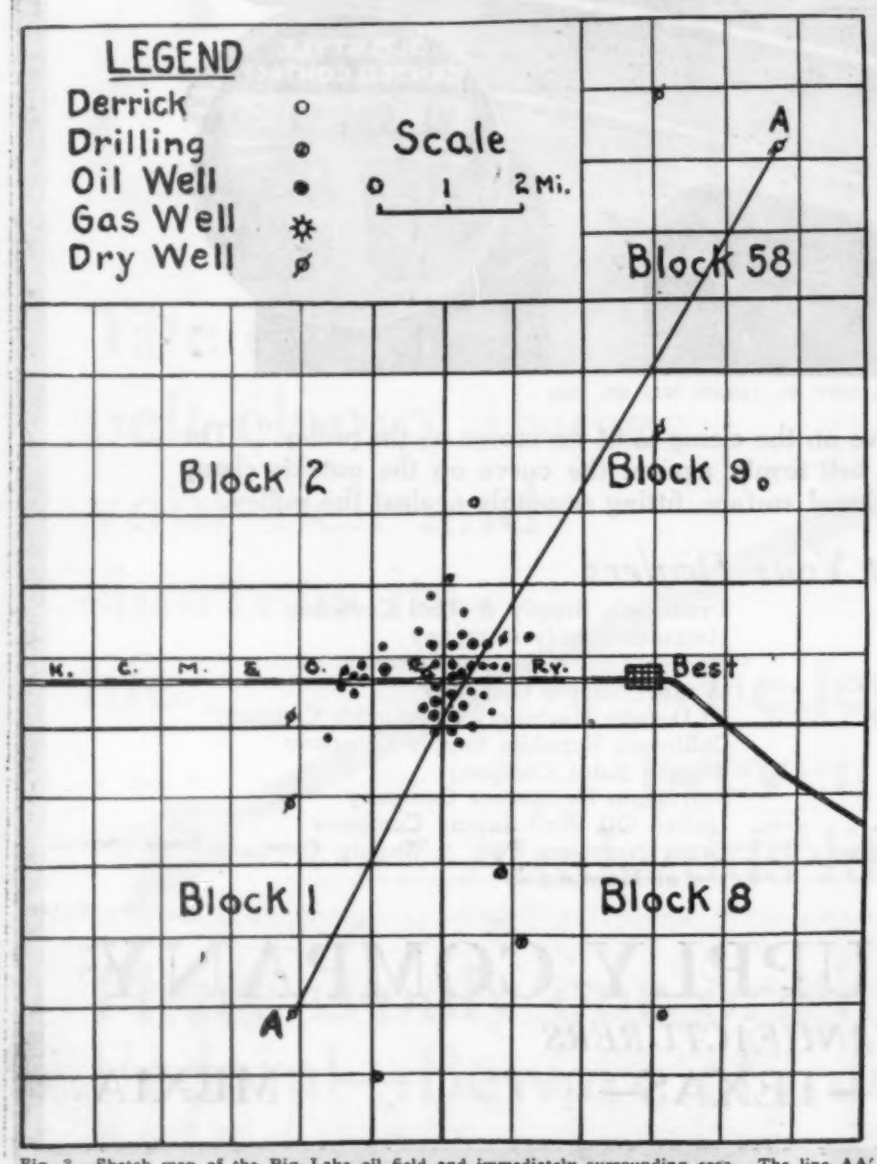

Fig. 2.—Sketch map of the Big Lake oil field and immediately surrounding area. The line AA' indicates the cross-section of Fig. 9.

Triassic

The Triassic deposits consist of dark red shales, gray and white sandy shale, calcareous cemented sandstones, and conglomerates. Rather abundant mica is a characteristic of the gray sandstone as seen in drill cores, but in well samples this is seldom noticed because the loosely cemented sandstone is broken up by the drill and the mica is lost in the washing. It seems probable that some of the "lime" logged by drillers in this interval is calcareous sandstone or a conglomerate containing abundant pieces of limestone which is characteristic of parts of the Triassic.

So far as could be determined the thickness of the Triassic varies from 100 to 500 feet with an average thickness of about 300 feet. The great variation in the thickness of the Triassic appears to be due more to the unconformity at the top of the Permian than to the unconformity at the top of the Triassic. Thus the maximum thickness of the Triassic overlies the thinnest redbed Permian, and conversely a thin Triassic on the average overlies a thick Permian. These relations are shown graphically in Figure 4.

The drill core already referred to, taken by the Texon Oil and Land Company on Section 6, Block 2, about four miles west of the field has been of material assistance in the study of the Triassic. Aside from this core relatively few samples were obtained from this series.

The Permian

The Permian in this field is not only of great thickness but presents a great variety of sediments. The uppermost Permian includes the redbed series consisting of clays, sands, salt, gypsum, and anhydrite. Underneath the redbeds is a great series of limestones, dolomites and shales. The deepest well drilled in the field, approximating 6000 feet, has not afforded evidence of having passed the base of the Permian.

The Permian Redbeds

Within the redbeds as a rule three prominent salt series may be recognized, designated for convenience the first, second, and third salt beds. The several intervals above and below these salt beds into which this series may be divided are discussed in order. The Permian redbeds as a whole reach a thickness in this section approximating 2500 feet.

Interval from the top of the Permian to the top of the first salt.—The exact contact of the Permian and Triassic is in most cases more or less doubtful. The difficulty of determining this contact is increased owing to lack of adequate samples from this part of the section, it being difficult to convince operators and drillers that it is worth while to retain samples from these strata. However, an unconformity is indicated at the top of the Permian. The interval between the first salt beds and the Permian-Triassic contact varies from 100 to 575 feet with

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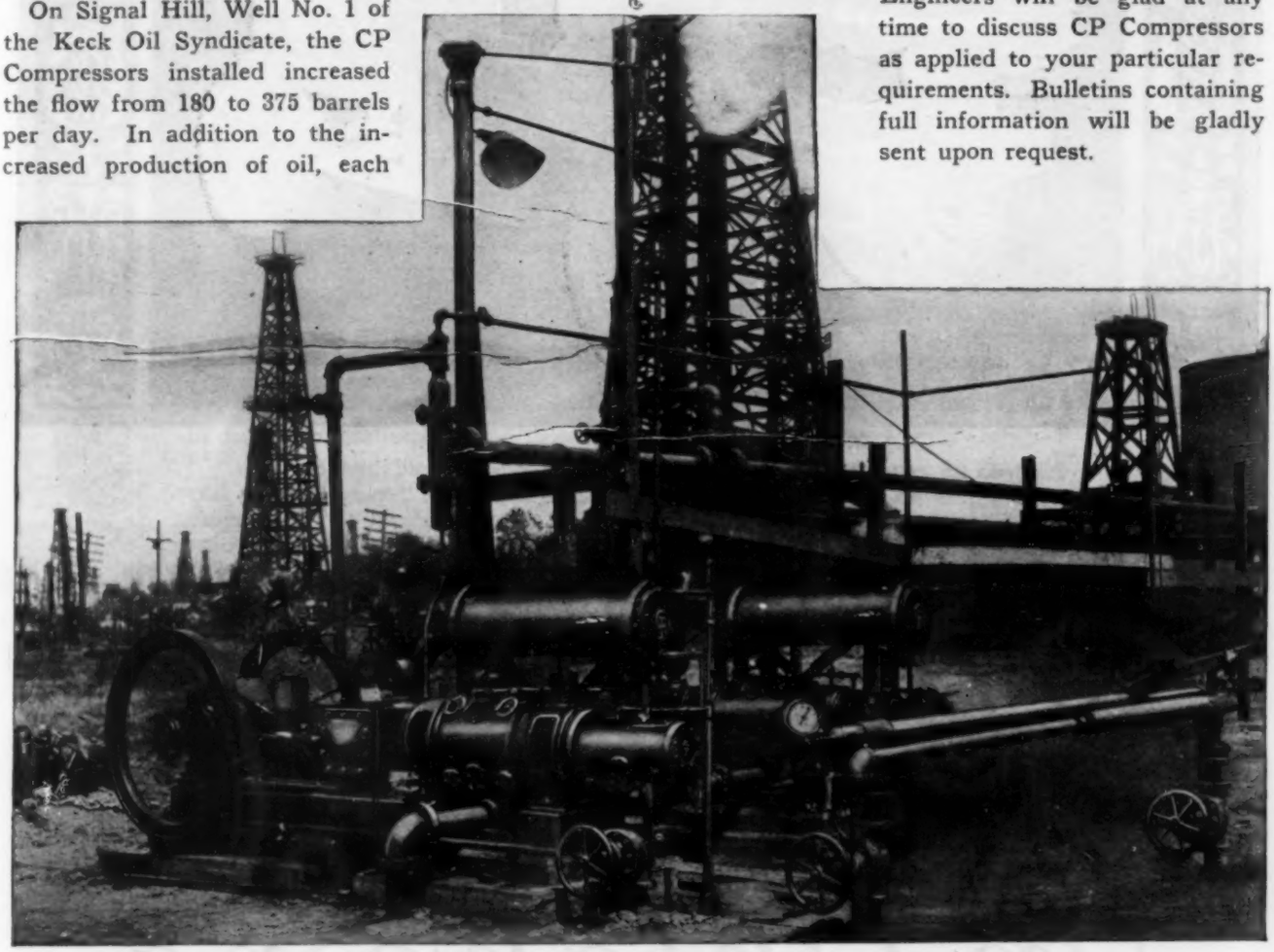

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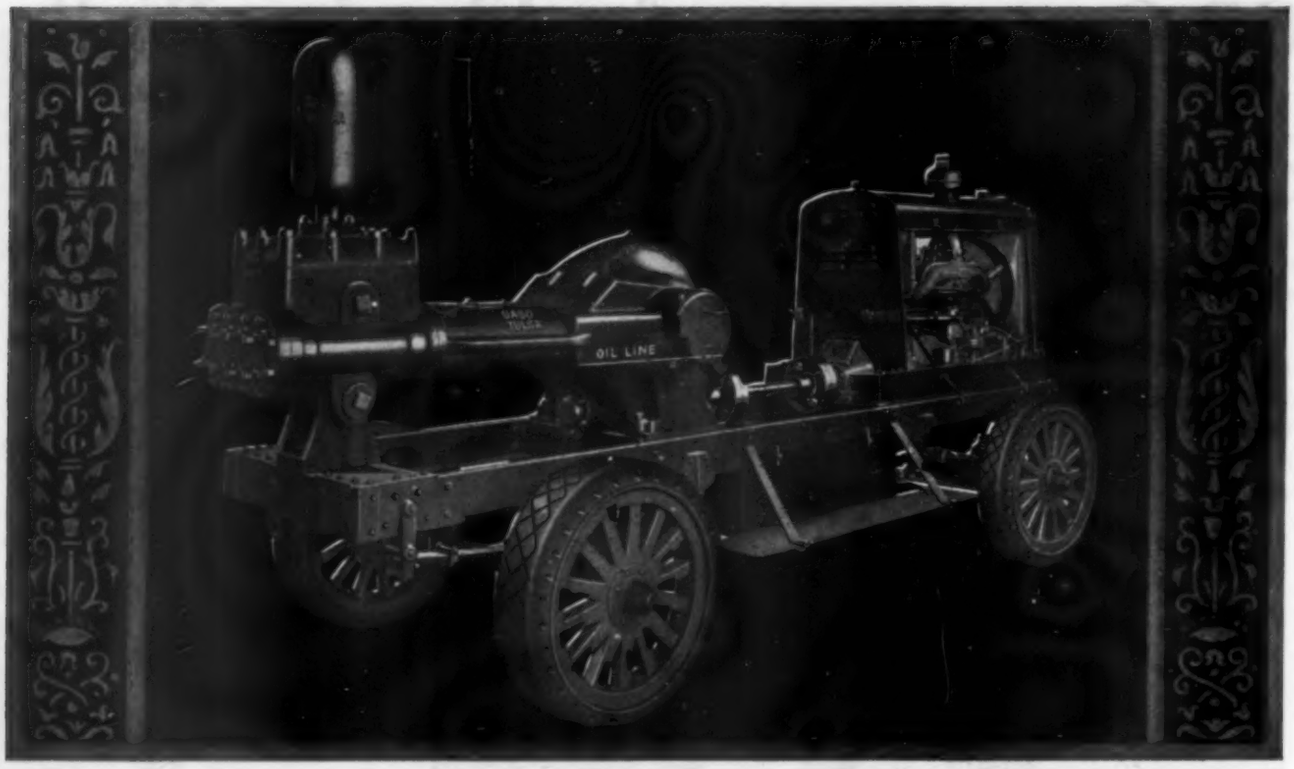

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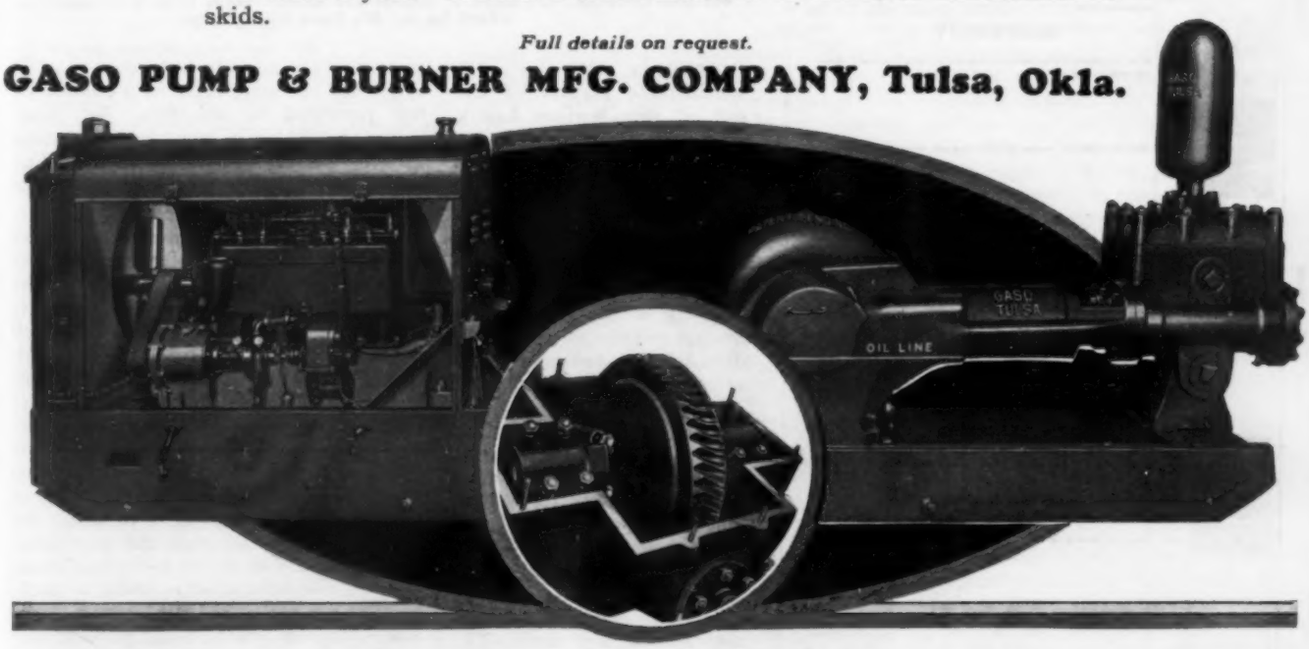

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an average of about 350 feet. The strata in this interval consist of brick-red shales and fine-grained, brick-red, more or less shaly sandstones and some few beds of anhydrite. The anhydrite, however, is much less abundant in this interval than below the first salt bed. In Figure 4 the well logs, shown in outline to the first salt, are arranged with the top of the upper salt as a common stratigraphic horizon. The Permian-Triassic and Triassic-Cretaceous contacts are indicated in the sketch.

The first salt beds.—Of the three salt beds, the first or uppermost is the thickest and most persistent. The average thickness of these beds approximates 500 feet, the minimum being about 270 feet and the maximum 630 feet. The samples obtained indicate that with the salt there is more or less anhydrite. This salt bed is also the most important potash-bearing zone in the field. Examinations made both by the university and by the United States Geological Survey indicate the presence of potash-bearing minerals in this zone; not as much, however, as is

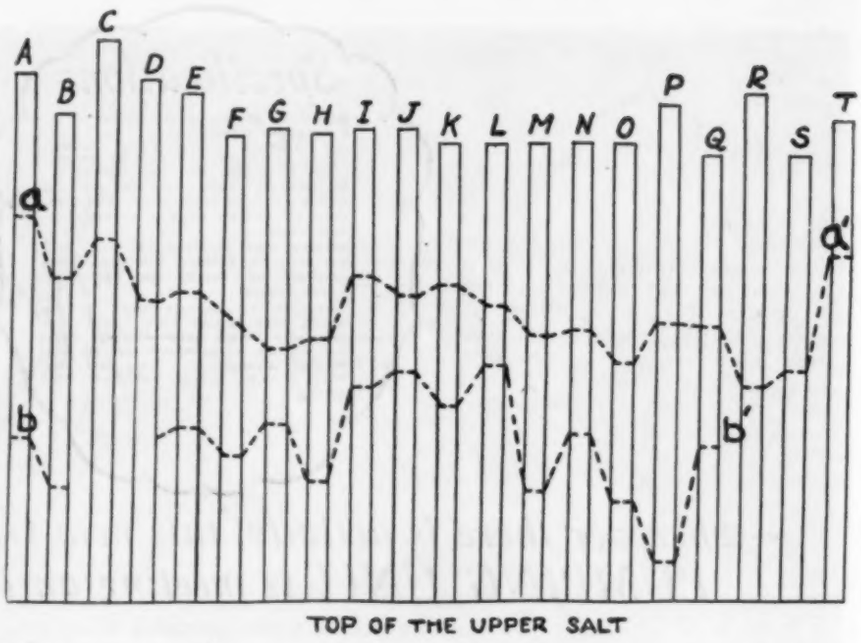

Fig. 4.—Well logs shown in outline to the top of the first salt. Scale: I inch 500 feet. aa', top of the Triassic; bb', top of the Permian. The logs are placed with the first salt as a common level; the sketch thus indicates the varying thickness of the Permian above the first salt and the varying thickness of the Triassic. The irregular lines, aa' and bb', indicate the Cretaceous-Triassic and the Triassic-Permian unconformities. The wells of this sketch are as folows: (A) Univ. 1, Associated Companies; (B) Univ. 1, Arkansas Fuel Oil Company; (C) Univ. 1, Transcontinental Oil Company; (D) Univ. 7; (E) Univ. 6; (F) Univ. 4; (G) Univ. 2; (H) Univ. 3; (I) Univ. 1; (J) Univ. 8; (K) Univ 10; (L) Univ. 9; (M) Univ. 14; (N) Univ. 15; (O) Univ. 5; (P) Univ. 12; (Q) Univ. 11; (R) McIntosh 1, Mid-Kansas Oil and Gas Company; (S) Hughes 1, Mid-Kansas Oil and Gas Company; (T) Univ. 1, Hughes and Smith. Wells D to Q inclusive are owned by the Big Lake Oil Company.

GEOLOGY OF THE BIG LAKE OIL FIELD

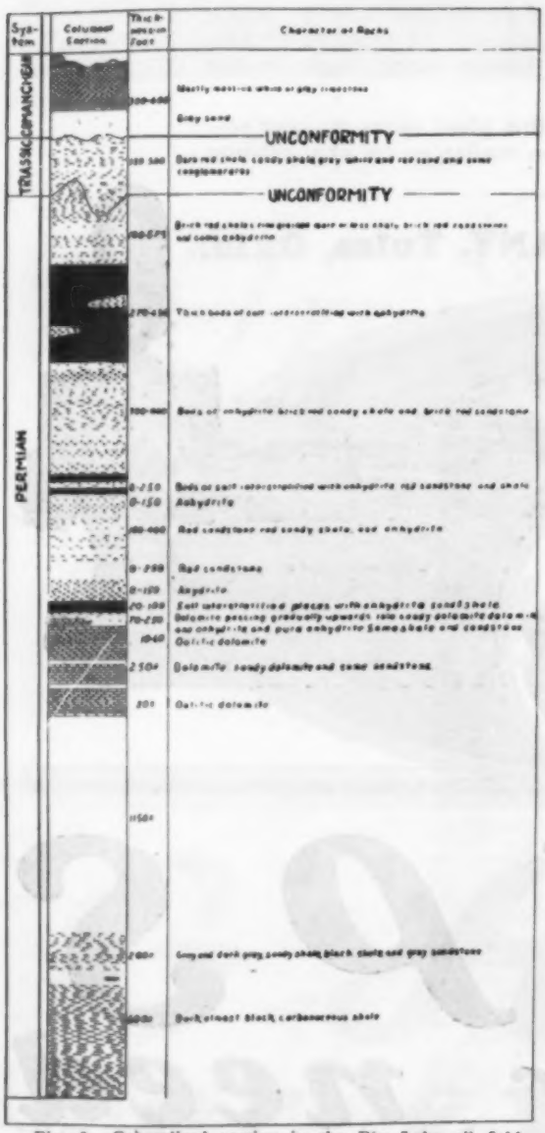

Fig. 3.—Geheralized section in the Big Lake oil field. Scale: 1 inch —1,000 feet.

reported in many logs. A considerable portion of the salt at this horizon has a reddish tinge and there also occurs more or less reddish anhydrite. Some confusion has resulted from the fact that polyhalite usually has a reddish color and that it occurs in these beds. As a consequence drillers and others are apt to class as potash any distinctly red mineral in spite of the fact that polyhalite cannot be distinguished from anhyhrite without the aid of chemical or mineralogical tests. The clear salt in most cases yields tests for sylvite and it is possible that this mineral may be present in considerable quantities in some of the beds.

Interval between the first and second salt beds.—The interval between the first and second salt beds ranges in thickness from 300 to 800 feet. It contains thick beds of anhydrite alternating with red sandstone and red sandy shale. The anhydrite beds of this interval are from 200 to 250 feet thick.

The second salt beds.—The second or middle salt beds are rather poorly defined and not as conspicuous as either of the other two series of salt beds. In some cases the second salt beds consist of a single bed but more often of a number of bed separated by anhydrite, red sandstone, and shale; in many cases as many as five beds are present. The individual salt layers vary in thickness, the whole interval approximating 100 feet.

Interval between the second and third salt beds.—The interval between the second and third salt beds contains the principal anhydrite deposits of the section. There seem to be two rather well defined zones of anhydrite deposition although deposition of anhydrite is not confined to these zones and there are exceptions within them. Just below the second salt beds there are beds of anhydrite 150 or 200 feet in thickness. Again just above the third salt beds there is a rather persistent bed of anhydrite of about the same thickness. Between the two anhydrite beds are more or less conspicuous beds of red sandstone reaching a thickness of as much as 200 feet in some places, but in others being present only a thin strata alternating with the anhydrite and shale. Strata of sandy red shale and silty sandstone are of frequent occurrence but seem to follow no general arrangement. The thickness of this interval varies from 500 to 700 feet, the average being 550 feet.

The third salt beds.—The third or lowest salt beds occur at a level varying from 70 to 250 feet above the producing horizon. The salt strata vary in number from one to five, although frequently only one stratum is present. Where more than one bed occurs the strata are separated by anhydrite, sand, and shale varying from

a few feet to 100 feet in thickness. In some cases there seems to be no sharp separation from the middle group of beds, thin salt beds alternating with other strata continuing through the entire interval.

Permian Limestones and Dolomites

Below the third salt beds the sediments pass from sandstones, red clays, and anhydrite into calcareous sandstones, sandy dolomites, and pure dolomites. All gradations between the different materials may be seen. For instance, the filling or cementation of the sandstone is frequently seen to be of anhydrite; dolomite is found extensively intergrown with anhydrite; and the dolomite shows all variations from pure dolomite to calcareous sandstone. In this connection it should be noted that anhydrite is practically never correctly logged, as drillers almost invariably wrongly identify it as lime. For this reason subsurface contours drawn on the top of the lime, unless controlled by examinations of cuttings are subject to a large possible error.

The producing horizon.—The sandy dolomite layers, underlying the third salt, have produced some oil. However, the principal producing horizon in this field is oölitic dolomite varying in thickness from 10 to 60 feet, and averaging about 20 feet. From the third salt to this oölitic horizon is an interval varying in the wells from which samples have been obtained from 75 to 170 feet. As elsewhere stated, an unconformity probably occurs within this interval.

The oölites in this horizon are very numerous and in some cases make up nearly the entire rock. They vary in size from 0.2 mm. to 0.5 mm., the greater number being near the latter size. They are concentric in structure and usually show a central body or nucleus, often consisting of a sand grain. Figure 5 shows a photomicrograph of a portion of a well sample indicating the proportion of oölites to other material. In many cases the oölites break out from the matrix when the rock is broken up by the drill and are found in the samples as separate particles (Fig. 6). On the other hand the oölites are in some cases firmly imbedded in the matrix, but the rock is nevertheless quite porous. In cases where oölites break out easily from the matrix they might be mistaken for coarse sand by a casual observer, and in one case at least they were so recorded by the driller. This may partly account for the persistence with which the drillers insist that the production comes from a sand. Microchemical tests show that, aside from the occasional sand grain nucleu in the oölites, the rocks vary from relatively pure limestone to pure dolomite. This oölitic zone is not only a distinctive but a very constant zone and there is practically no instance of a well within the field, of which a complete and carefully kept set of samples is available, in which this zone is not easily and definitely identified.

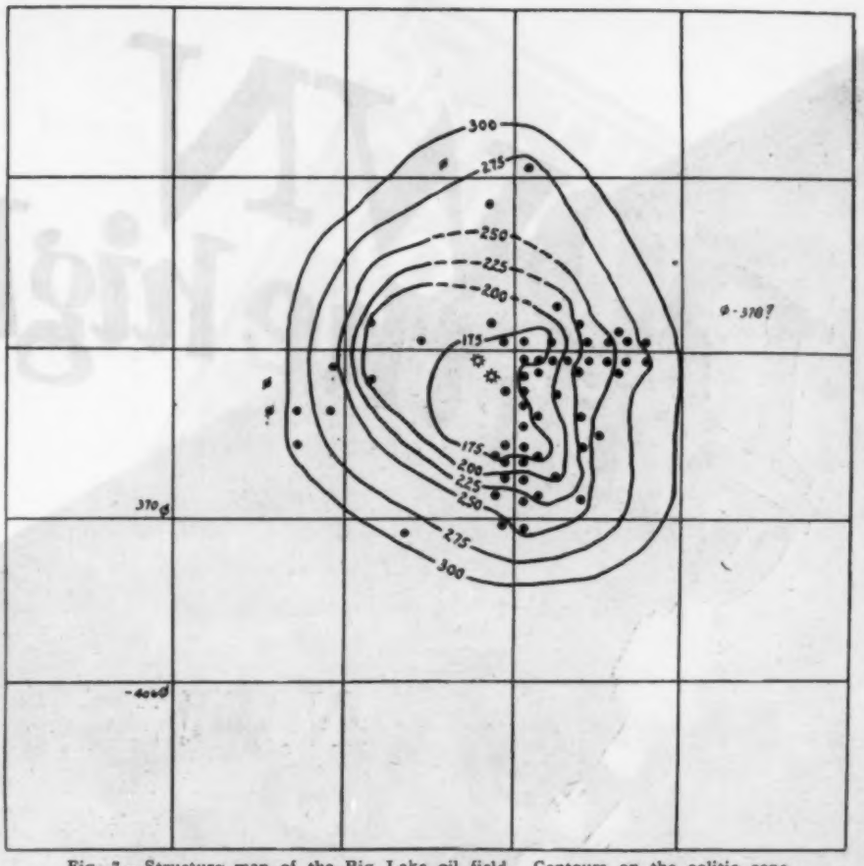

Fig. 7.—Structure map of the Big Lake oil field. Contours on the oolitic zone of the producing horizon.

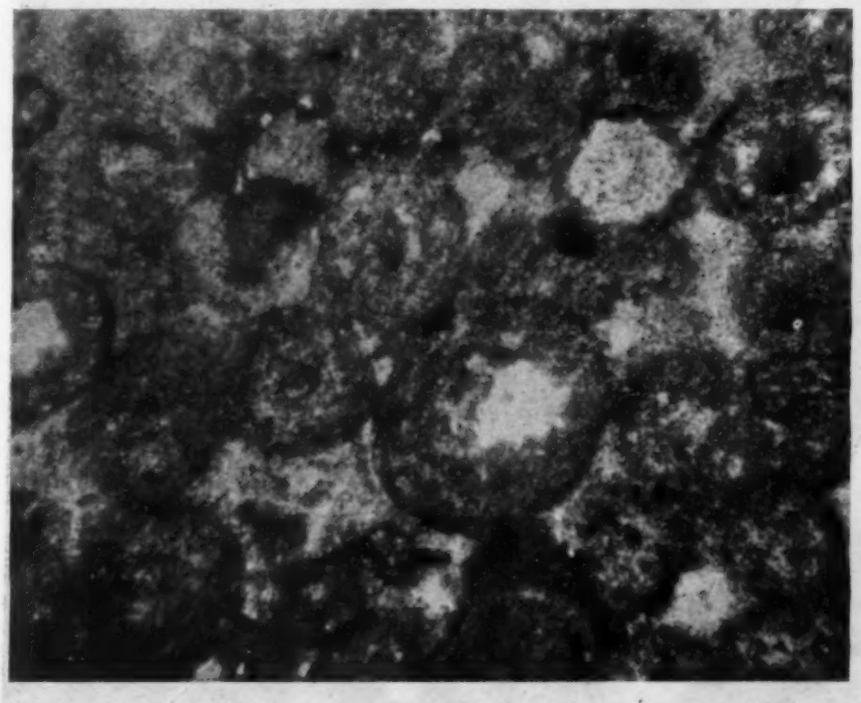

Fig. 5.—Photomicrograph of a thin section of oölitic dolomite, from Big Lake Oil Company well No. 12, depth 2963-67. ×35.

Sediments below the producing horizon.—Samples obtained from wells near the field indicate that the sediments for as much as 300 feet below the oölitic zone of the main producing horizon consists of dolomite, sandy dolomite, and sandstone. In the Hughes well of the Mid-Kansas Oil Company (Sec. 25, E. G. & R. R. R. Sur.) at 280 feet below the producing horizon is a second oölitic dolomite. The deepest well drilled in this field approximated 6000 feet. From this well (Univ. 1, Group 2, Texon Oil and Land Co., SW ¼ Sec. 22, Blk. 9), samples were obtained from 4855 to 5710 feet. Of this interval, the first 100 feet consist of sandy shale, some of which is dark in color, in which, particularly in the dark strata, radiolaria are found in

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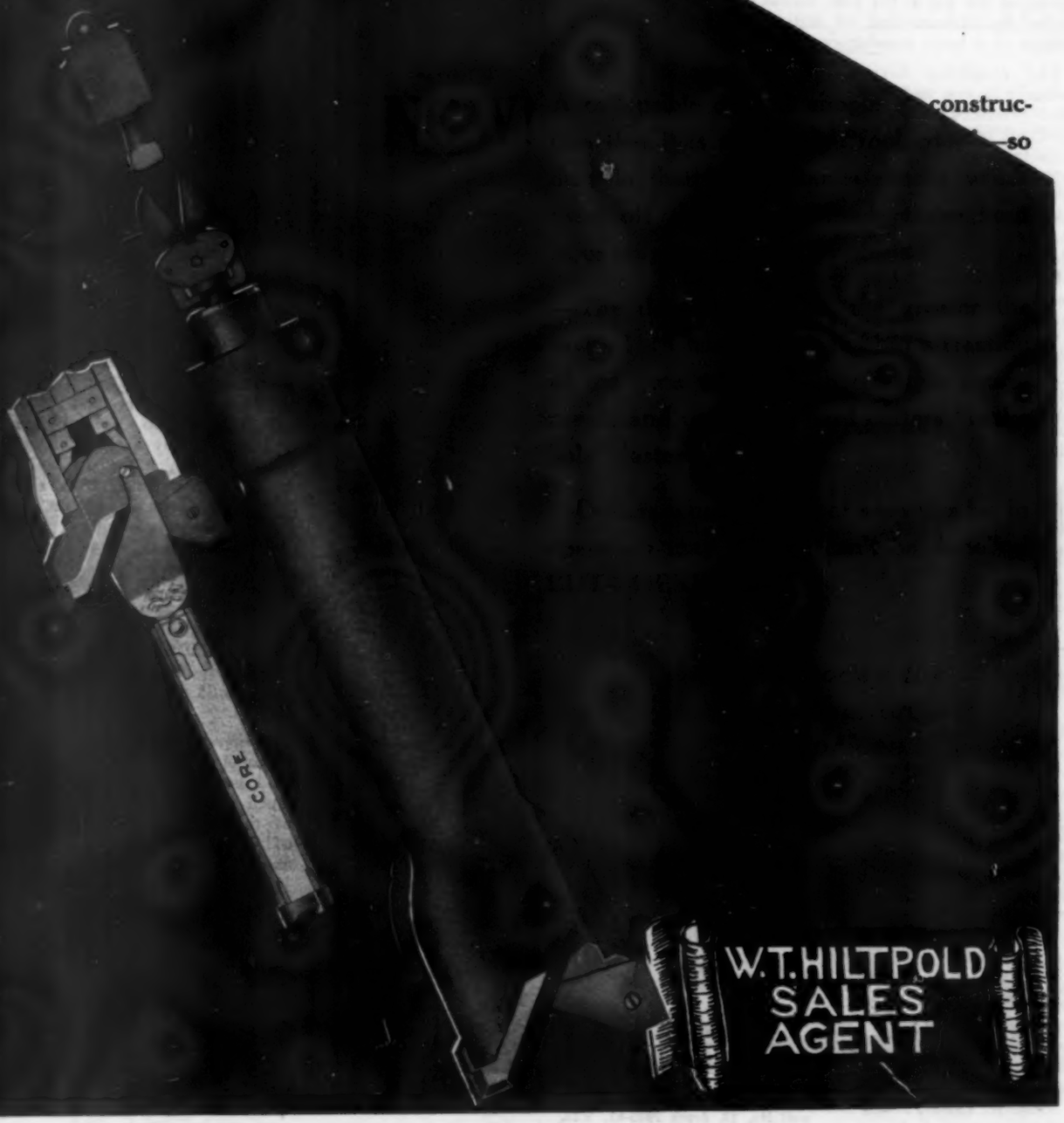

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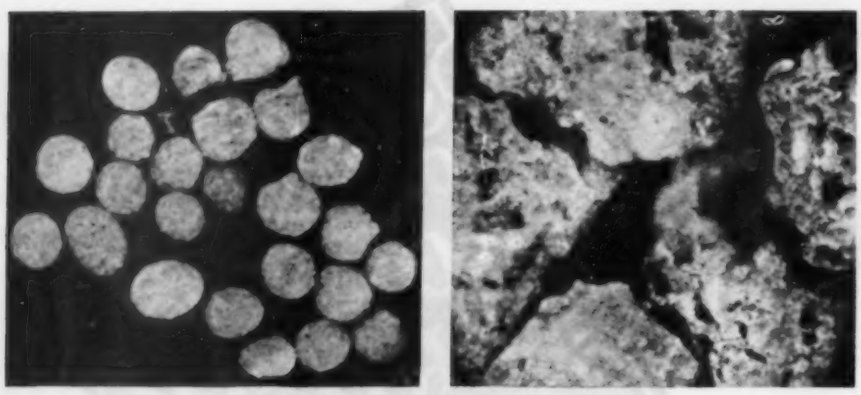


Fig. 6.—Individual oölites picked from well samples, and porous dolomite from the producing horizon. ×11. The oölites are from Hughes and Smith well, Sec. 5, depth 3375 feet; the dolomite is from the Big Lake Oil Company No. 12, depth 3040 feet.

some abundance. Next below this shale is found 80 feet of calcareous sandstone with a little dolomite. The next lower 600 feet in the well consist almost entirely of dark, almost black, carbonaceous shale, with occasional strata of gray shale and a little sandy shale, grading upward into a lighter, more sandy shale. Chloroform extraction tests show traces of oil in many of the samples. The only fossils found in this interval were radiolaria, which occur at various levels throughout the interval. Dr. J. A. Udden[3] has suggested that the abundance of radiolaria may indicate the Word formation of the Permian, similar occurrence of radiolaria having been observed by him in this formation. On such evidence as is available these sediments are tentatively referred to the Permian. From the lower 290 feet in the well, 5710-6000 no samples were obtained.

The section in this field to a depth of 5700 feet thus includes Comanchean, 500 feet; Triassic, 300 feet; Permian, 4900 feet. Since unconformities are present, these thicknesses, although representing averages, will be found to vary in individual wells.

Source of Oil

The source of the oil is undetermined. It may originate in the strata in which it is found or may be derived from the great body of bituminous shales which, as indicated in the generalized section, underlies this field. Aside from the main producing horizon in the oölitic dolomite, considerable gas and some oil is obtained from sands within the redbeds at a depth from the surface of about 2400 feet.

Structure

A structure map made on the water sands near the base of the Comanchean indicates that the Comanchean sediments reflect little if any of the structural features of the producing horizon. The dip appears from data on the water sand to be above normal at the west edge of the field and possibly below normal over the remainder of the field. If, therefore, the Comanchean is affected at all by the structural conditions in the field, the change from normal dip amounts to nothing more than terracing. Aside from the Comanchean the first horizon recognized throughout the field is the large salt bed.

For structural mapping, an oölitic horizon lying within the producing zone has been found the most readily recognized. The nature of the strata immediately overlying and underlying this horizon together with its own distinctive characteristics makes its recognition possible in dry as well as in producing wells. For this reason this horizon has been selected as the key horizon in mapping the structure. It has already been shown, however, that the presence of a few oölites within the rock does not establish this horizon. Oölites are found both in the sandy dolomite above and in the dolomite below this horizon, and as stated above there is another zone of oölitic dolomite 250 or 300 feet below the main zone.

A structure map on this horizon shows pronounced doming in the Permian below the redbeds, the closure on the dome being not less than 125 feet and probably considerably more. At the high point on the dome the producing horizon is found at about 160 feet, while down the sides of the dome production extends to about 350 feet, sea-level datum. Contours on the oölitic dolomite, which is the principal

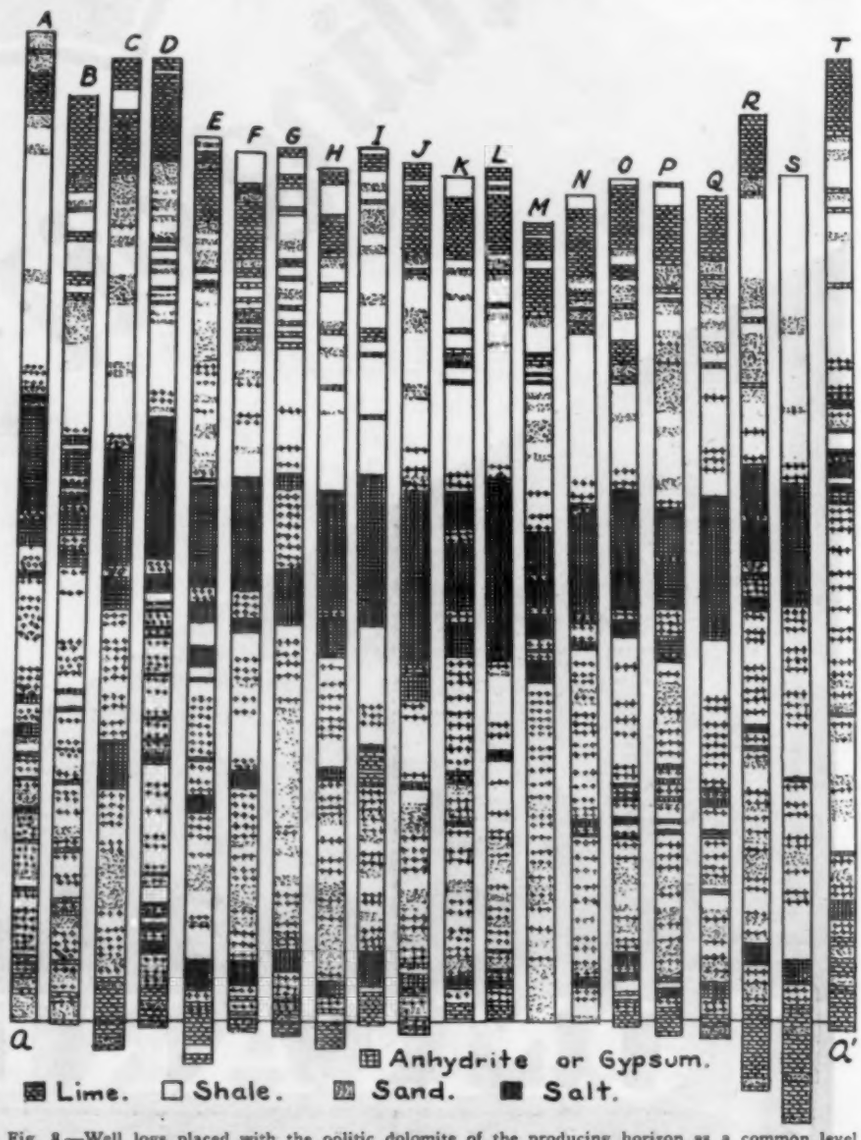
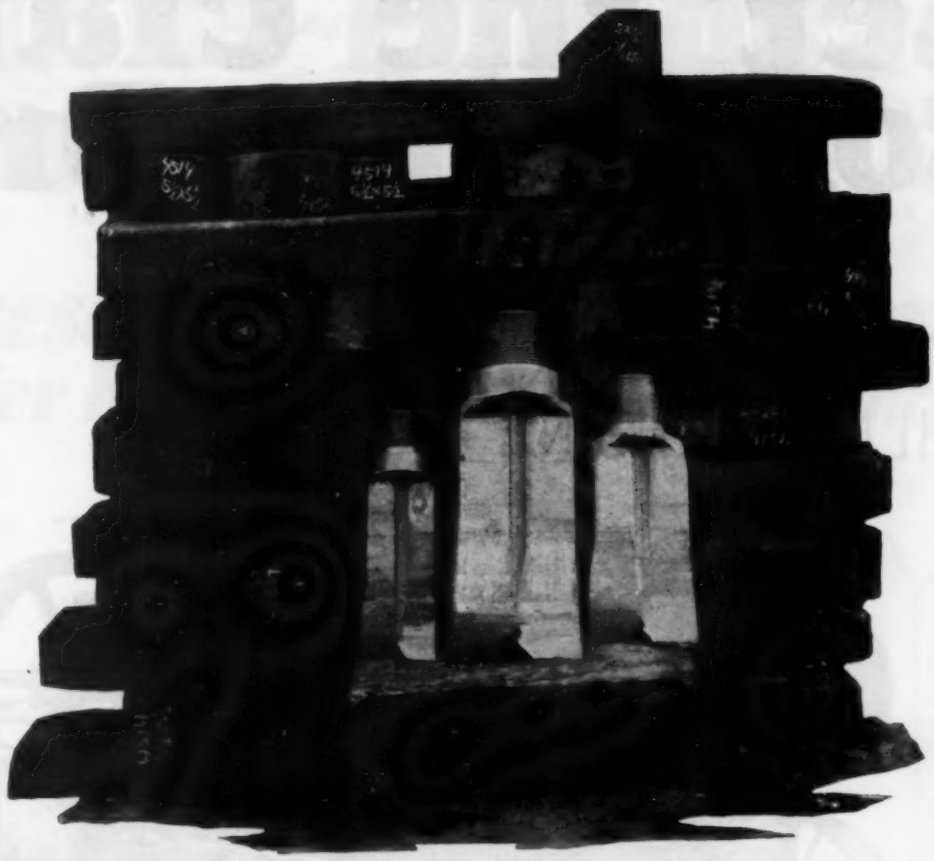


Fig. 8.—Well logs placed with the oolitic dolomite of the producing horizon as a common level. Wells A to C are south of the field, while wells Q to T are north and northeast. The other wells are in or near the field. aa' is the oolitic dolomite of the producing horizon. The intervel from the first salt to the producing horizon is variable, being in general less within the field than elsewhere. The wells are the same as those of Figure 4. Scale: 1 inch=800 feet.

[3]Personal communication.



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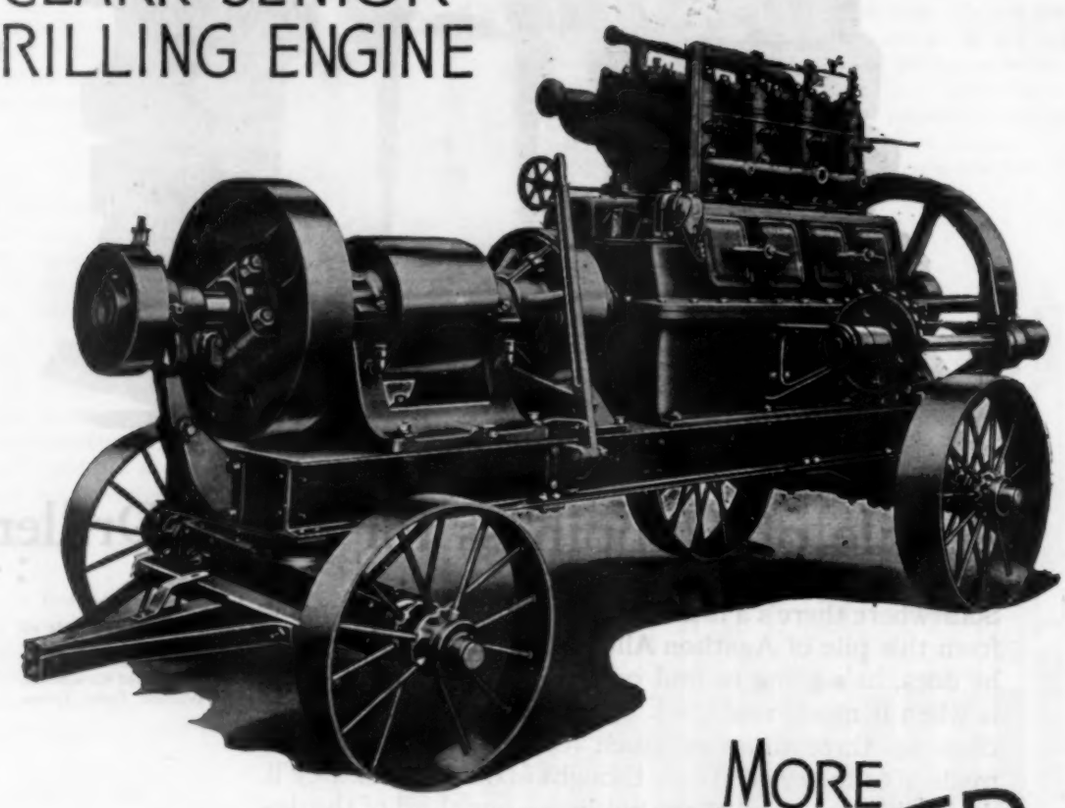

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producing horizon, are shown on the structure map (Fig. 7). A structural map contoured on the first salt shows less intensive folding, although the closure on the salt within the producing area is at least 75 feet.

Unconformities

As indicated in the generalized section (Fig. 3), unconformities are found in this section at the base of the Cretaceous and at the base of the Triassic. That there are also unconformities in the Permian seems highly probable. The interval from the first salt beds to the oölitic dolomite in the main producing horizon varies in thickness as much as 420 feet. The variation is least where the salt beds lie directly above the high points of the subsurface structure and greatest where the salt beds lie above the low points on this structure. The large variation in this interval suggests the probability of an unconformity at some place between the oölitic dolomite and the upper salt beds.

The relation of the upper salt to the producing horizon is indicated in the series of logs shown in Figure 8. This difference in the interval is further illustrated in Figure 9 in which wells *C*, *P*, and *S* of the previous illustrations are placed according to sea-level elevations.

If such an erosion interval between the first salt and the producing horizon exists, it is desirable to ascertain where it is in the section. The evidence in this regard is not at all conclusive on account of the lack of indentifiable key horizons within the redbeds, the salt beds being about the only ones which can be so used. Because of the rather poorly defined character of the middle salt beds they make a very unsatisfactory key horizon. However, these beds seem to occupy a stratigraphic horizon roughly parallel to that of the upper salt beds. The lower salt beds are even less well defined, but seem also to be roughly parallel to the upper salt beds. It is therefore probable that there is an unconformity in the section at the base of the redbeds.

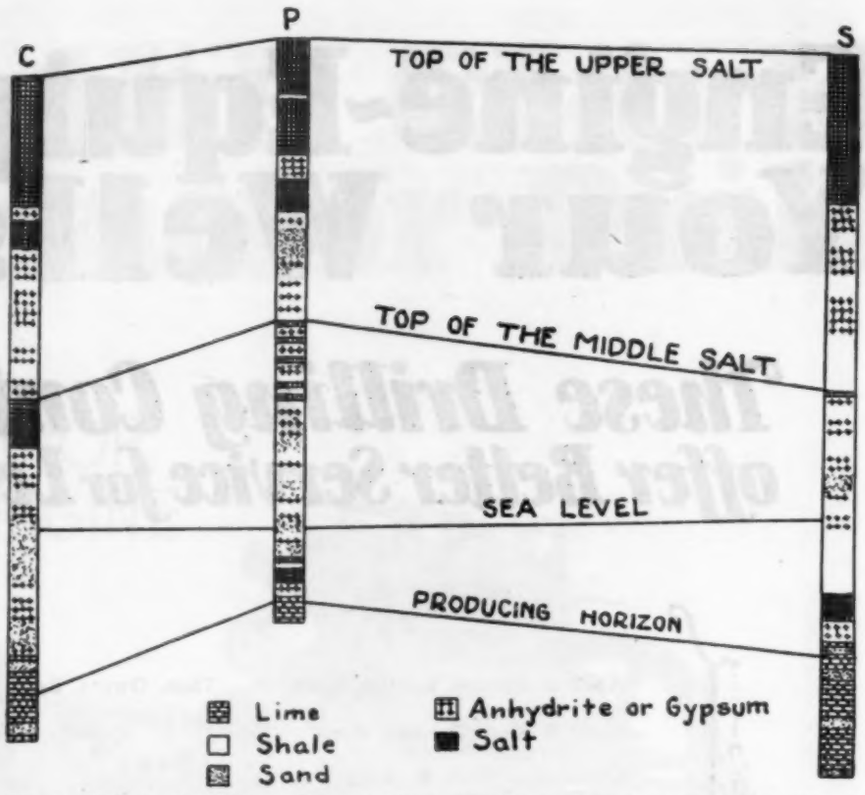

Fig. 9.—Wells C, P, and S, of Figure 8, placed according to sea-level elevations, but with that part of the log above the first salt omitted. Scale: 1 inch=800 feet.

Boom Drilling in Texas Brings About Labor Shortage

Fort Worth, Texas.—The supply of labor in the various active districts in Texas is hardly keeping pace with the demand, and the services of both drillers and rig builders have been bid for in a few of the new fields. The Texas Panhandle district attracted skilled men and laborers by the hundreds from all the Mid-Continent fields several months ago, and when active drilling campaigns were started during the past several weeks in the Hurdle district of West Texas and the Nigger Creek area in the East Central Texas fault region the available supply of rig builders and drillers was not sufficient to meet the sudden demand.

The drilling rush now underway in the Panhandle, Western and East Central part of the state has caused a noticeable migration of workmen from the older fields, thereby causing the operators in the latter oil centers to experience difficulty in getting men for the first time in years. Boom attractions and higher wages always prove a great drawing card to field men.

The starting of more than a score of tests in the Hurdle district, centering on the Crane-Upton County line in West Texas, after the completion of two big flowing wells developed a shortage of rig builders, and their services were bid for by the operators. Rig builders in this district were receiving from $14 to $18 per day, and when the rush developed the wage scale jumped to $20, with a few concerns paying $22 daily. However, such high wages are only temporary, as men were attracted from other districts, and one contractor imported 65 men into the Hurdle district from the Panhandle.

Drillers in the Hurdle district have likewise profited by the sudden demand for additional crews, and their wages have been boosted from an average of $10-12 daily to $13-15 daily. Living expenses are running higher in this new field due to its remoteness from towns of any size than all other active fields in the state. Along with the increased wage scale the drilling contractors are being cut down on their footage price contracts. One Hurdle district operator let five contracts last week to an Oklahoma contracting concern at $3.00 per foot, with the contractor furnishing his own gas engine and fuel for drilling, while this same operator is reported to have paid $5.00 per foot for the first wells drilled on his acreage. Most of the larger companies in the Hurdle district are paying contractors $3.50 per foot in Crane County and $3.25 per foot in Upton County, and the contractors furnish their own fuel and drilling engine.

The Hurdle district is becoming one of the most popular fields in the state for the cable tool contractors, as no gas is encountered above the oil producing horizon, with very little to contend with in the pay, while water troubles are negligible, and formations comparatively easy digging in the productive area. Such popularity is causing additional rigs to be shipped in daily, and footage prices may be forced to a lower level in the near future.

Drilling Contracts Lower

The Panhandle district has been literally over-run with cable tool contractors, and prices have dropped from six to four dollars per foot within the

(Continued on Page 96.)

Have You Seen

The New Deep Well Chabelco

Never in the history of rotary drilling have so many startling improvements been made in oil well chain as are built into Rex Deep Well Chabelco 1030 D.W. 3 and 1240 D.W. 4.

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When you see 1240 D.W. 4 and 1030 D.W. 3 you will agree that we could scarcely be too enthusiastic about them. They are better than any chain ever built for oil well drilling—you can see that by looking at them. But also, perhaps you would like to have all the dope. It's all told in the folder Deep Well Chabelco. Send for your copy.

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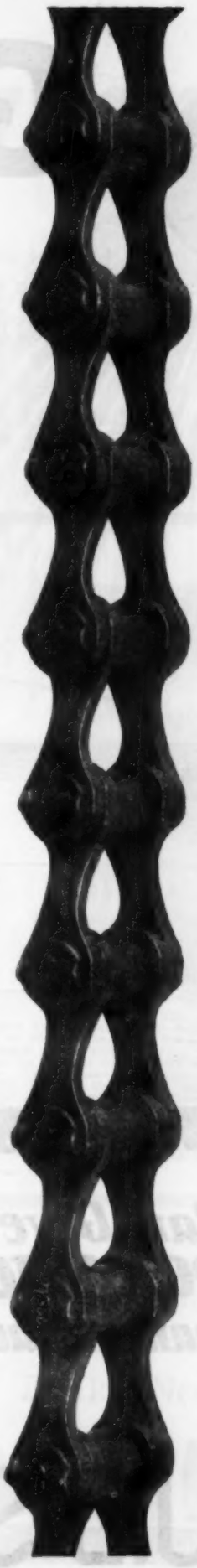

The Rex Pinlock That Ends a Problem as Old as Rotary Drilling

The lock consists of the lock disc and a special spring pin

In assembly the lock disc is seated on the pin

Next the pin is put in place

Then the lock disc ear is hammered up with any handy tool

The cotter pin is one of the oldest of mechanical devices. It is also one of the crudest. It does not stand up to oil field work.

To overcome this objection to the cotter, riveted chain was often used.

But that made it extremely tough to take out a link, take down the chain or assemble it in the field—

The new Rex Pinlock gives Rex Deep Well Chabelco 1030 D. W. 3 and 1240 D. W. 4 the advantages of both the cotter and the riveted pin, without the drawbacks of either.

GONE—

The above view shows an installation of Liquid Safety Valves with Flame Arrester, the modern and scientific method for providing absolute security from fire.

You Can Give— EVAPORATION a permanent vacation with Liquid Safety Valves!

LIQUID SAFETY VALVE

Say you saw it in The OIL WEEKLY

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By using Liquid Safety Valves you get the benefit of pioneering experience in the conservation and safety field. Liquid Safety Valves are complete units and do not require any additional conservation or safety equipment to efficiently eliminate Evaporation, while increasing the safety factor against fire and wind, of the stored oil.

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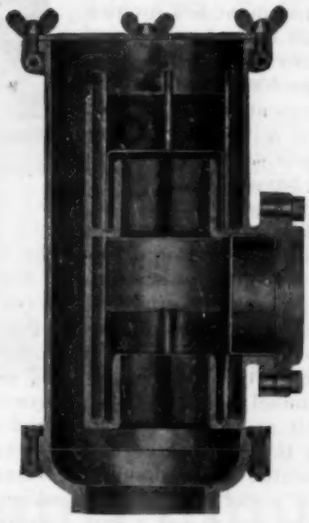

Liquid Safety Valves are so designed as to operate at an accumulation of one-half ounce of vacuum or pressure. When such an amount of vacuum or pressure has been set up, two cups each working against the other as shown in diagrammed cut above, immediately relieve the abnormal condition on the tank. Their action is positive and automatic. Liquid Safety Valves, while eliminating Evaporation, also eliminate all losses from mechanical carrying power or wind which might cross an opening on the tank from any direction. They do this by allowing the tank to be kept airtight, with safety.

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Say you saw it in The OIL WEEKLY

Rio Bravo Lease at Saratoga Is Example Of Economical Operation

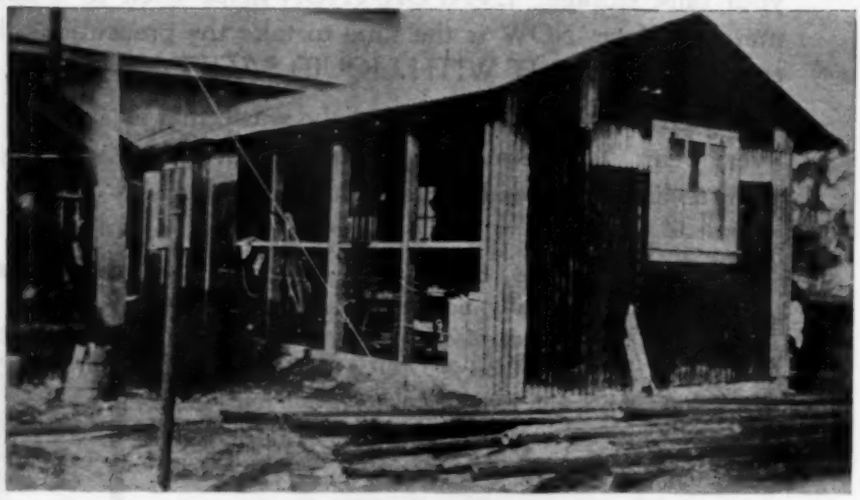
Co-operation of all employes to that end makes 23-year-old lease efficient

By Wallace Davis
Staff Representative

Houston, Texas.—Rio Bravo Oil Company's 700-acre fee lease at Saratoga, after 23 years under the single management of this organization, is an example of one of the best operated field properties in Texas. Efficiency and economy are the last words of every one of the more than 50 employes on the lease, and continued experimental work has brought results to a fine point of success.

Draining salt water which has been treated out of the oil off of the entire lease to a low central point and running it back into the salt dome by means of a 2500-foot well into the salt, is a Gulf Coast production problem that was first solved by Rio Bravo at Saratoga. This method of handling salt water came as the result of complications arising out of contaminating bayou water, which was being used to irrigate rice land near the fields. The well for draining salt water back into the dome was drilled at the lowest point on the lease in order that no power cost would be necessary in bringing the water to this point. At the surface of the well the company has a concrete pit to collect the drainage and funnel it into the well. Cavities in the salt at below the 2500 foot level absorb the salt water and carry it into the depths of the dome.

A unique feature about Rio Bravo's Saratoga lease which has meant a vast cut in operating costs and a cleaner lease is the company's system of reclaiming waste oil. Like the method of ridding the lease of salt water, the company drains all waste crude from the various points on the 700 acres to a low elevation, where it is turned into a central canal. The crude, along with other waste from the lease, gravitates toward a lock-like system where the oil is skimmed from the top with a wooden baffel, which is raised and lowered according to the amount of waste in the canal by a windlass. The crude is turned into a side trough as it is skimmed off and pumped back to a treater. So well has the company got the system to working that practically no crude is lost on the lease.



Rio Bravo's welding shop where everything is made except the production itself

A Private Sawmill

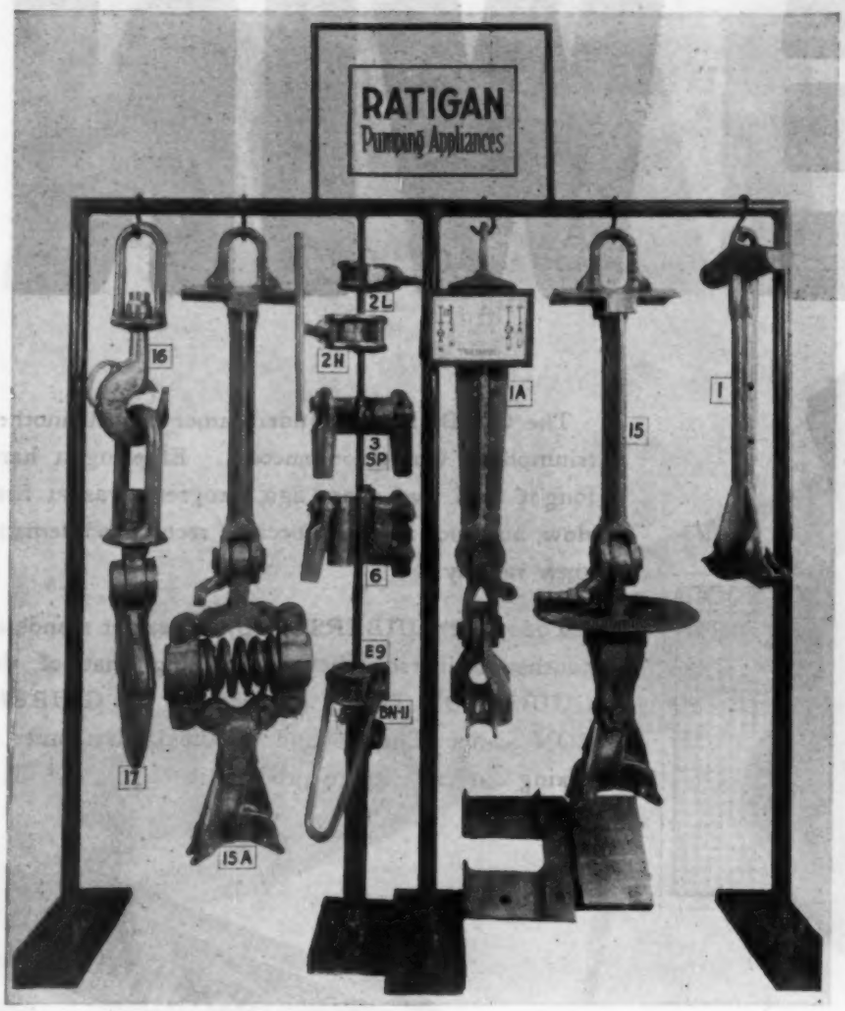
Rio Bravo buys no derrick timber nor lumber for the building of houses at Saratoga. The company has its own sawmill on the lease, which is located in the midst of one of Texas' largest pine forests, and practically any grade of lumber can be turned out on short notice. The 29 houses on the lease, all of which have been built since construction of the sawmill, are of the company made lumber.

"Why buy derrick timber and building lumber when you have your own pine forrest right on the lease," is the way Rio Bravo officials looked at the situation.

One of the most efficient welding and machine shops to be found in any field in this territory is maintained by Rio Bravo at Saratoga. Facilities for both electric and acetylene welding are had and are used according to the type of work done. For light work and cutting, the blow torch is used, while the electric welder does the big jobs for the lease. Many implements and pieces of machinery have been turned out by the shop when the company was in an emergency and had no time to wait on shipments. The Saratoga shop also does welding jobs for other Rio Bravo leases located at Pierce Junction, Spindletop, Luling and Electra fields. At the time the writer visited the shop two guards for heavy rotary rigs had just been made by cutting a joint of 6-inch casing down the center with the acetylene blow torch and welding the half casing onto a strip of sheet steel, which had also been outlined properly with the blow torch.

Success in Co-Operation

Rio Bravo's unusual success at Saratoga should be largely attributed to co-operation. John R. Suman, vice-presi-



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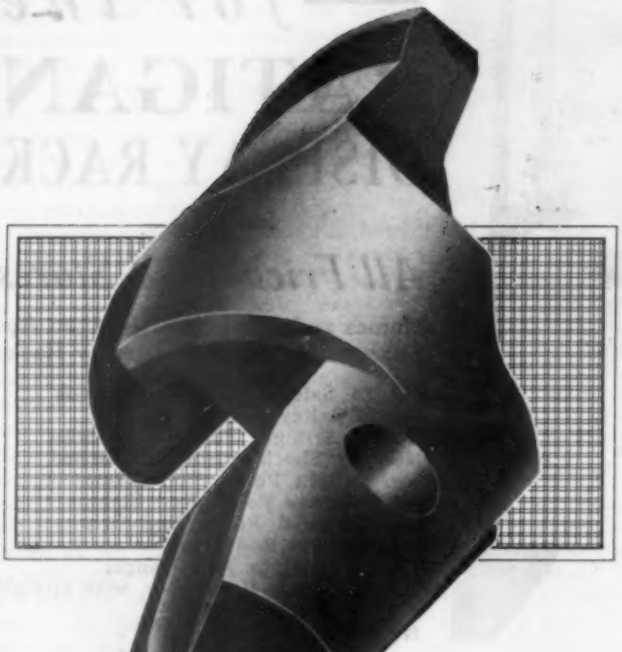
WE WIN



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Today the GUIBERSON Underreamer stands as another Guiberson success rivalling that of the GUIBERSON Tubing Catcher and the GUIBERSON Swab. The demand for the Underreamer is taxing our capacity to produce it.

GUIBE

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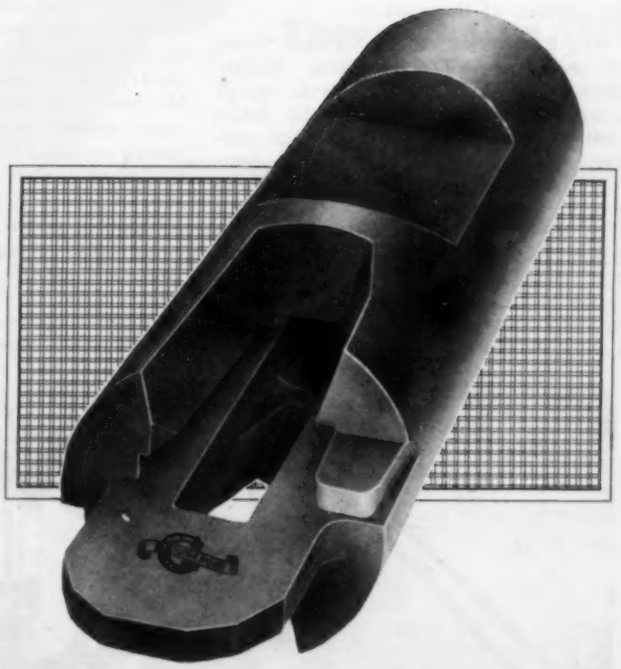

Operators have found the GUIBERSON to be an underreamer without weak points. Insides cannot pull out. Cutters do not pull off. Down-thrust bearing surface between body and cutters is three times that of others. It is literally "the World's strongest underreamer"—as rigid as a drilling bit.

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RSON

Say you saw it in The OIL WEEKLY

dent and general manager of the company, and Charles H. Homer, general superintendent, are frequent visitors to the lease to personally oversee the work. There are no bow ties nor cocked hats to be seen on the 700 acres during work hours. Officials are members of the gang and call the employes by their first name to the last roughneck. R. V. Plyler, field foreman, like the other officials, is an advisor rather than the boss on the lease.

Life on the Saratoga lease passes off much like that of a big family. A boarding house, where the single men and visitors take their meals, is operated by the family of one of the employes on the lease, and chicken dinners and home-made cakes have made the place famous throughout the field as an ideal eating place.

All is not work on the 700 acres. Through the work of W. T. Radford, now field foreman for Rio Bravo at Spindletop, a concrete tennis court and swimming pool now play a part in the early evening life of the employes at Saratoga. A baseball diamond also is at the disposal of the employes after work hours and nine innings of office men vs. roustabouts is typical of week-ends with the force on the lease. A club house is maintained on the lease equipped with rooms for entertainment and gymnastic sports, and single rooms are provided to house visitors and visiting officials of the company.

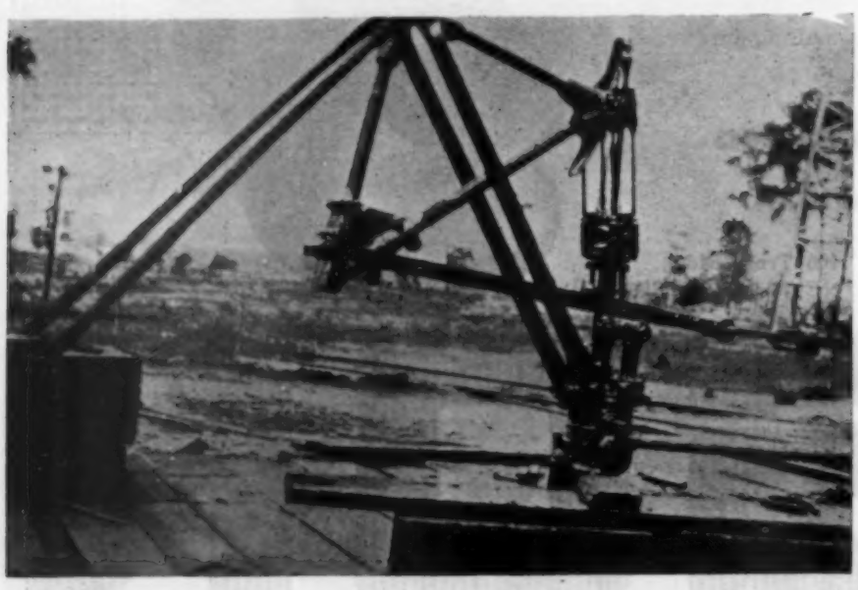
Rio Bravo has on its 700-acre lease 69 producing wells averaging slightly more than 10 barrels per well, which comprises about one-half of the field's 1350 to 1400 barrel daily average output. Much of this production is coming from old producers yielding from one to five barrels from depths of less than 1000 feet on top of the dome. An accompanying illustration shows the Rio Bravo Fee No. 200 pumping between one and two barrels after being brought in 23 years ago. This well has produced 11,400 barrels from 994 feet.

Boom Drilling in Texas Brings About Labor Shortage

Continued From Page 88

past three months. Four dollars is the bottom price, while a number of the companies are paying $4.50 and $5.00 in order to get their pick of the contractors and have the assurance of the fulfillment of contracts. However, the low price is being accepted by many of the best contractors in the district in order to keep all their strings running full time. Up until recently a premium was paid on all contracts for tests drilling in the granite wash pay horizon over the sandy-lime pay area, but this difference has been discontinued. A number of rotary contractors are being engaged by the operators in the Wilcox field, Gray County, to drill to the top of the lime, around the 2100-foot level, and in some cases through part of the heavy gas pay, then standardizing to complete in the 2900-3000 foot pay. Drillers on cable tool outfits in the Panhandle are receiving from $13 to $15 daily, and earn the extra pay as compared to most cable tool fields, owing to the troubles with quicksand, water and heavy gas production above the oil pay, while poisonous gas is another hazard in certain sections of Carson and Hutchinson counties.

Roustabouts and day laborers have been attracted to the grain fields to a limited extent, and this class of oil field help is especially hard to get for temporary work on short notice in the Wichita Falls district, where the wage scale ranges from $5 to $6. These wages are also being paid as a rule in the active districts. The Panhandle district was overrun with this class of oil field help when news of the big development campaign was broadcasted some few months ago, but the men are now drifting southward to the Hurdle and Nigger Creek fields in search of a change of scenery.



Wind blew old No. 200's derrick down but couldn't blow away production and she's still pumping nearly two barrels after 23 years.

Moraco Company Will Drill in Grimse County

Houston, Texas.—The Moraco Oil Corporation has recently taken over operations of Rasmussen & McCausland at Iola, Grimes County, and is making preparations for drilling a 3000 foot test on the G. W. Dodd farm, 400 feet south of the original test in this vicinity, which was lost in February of this year at 3960 feet after a fishing job of several months. Derrick is up for the wildcat and a heavy type rotary rig is being moved in, with plans to spud about July 15. Shows of oil were encountered at 1840 feet and at 2580 feet in the first test.

A block of approximately 7500 acres around the location is held by the Moraco Oil Corporation, including 4000 acres obtained from Rasmussen & McCausland. Several of the major companies have recently leased protection.

Big Lake Field Responsible for Much Wildcat Drilling

Continued From Page 68

tions, and is regulating its drilling program so as to maintain current production slightly above the 20,000 barrel mark. This company has 27 tests drilling to the main pay and five going down to the 2440-foot producing horizon; one rig and 13 locations. Daily production of the Big Lake Oil Company amounts to 20,100 barrels from 23 flowing and 41 pumping wells.

The Texon Oil & Land Company is producing 10,100 barrels daily from 9 flowing and 37 pumping wells. This company has 10 active tests under way, with rigs up for two additional tests. The Texon lease will probably be drilled up before the close of the present year, while in the meantime the company is drilling a wildcat test in the southwest corner of section 19, block 9, being about four miles due east of the Big Lake field. This wildcat is credited with logging the key formations considerably higher than the four dry holes separating it from the field proper, with favorable surface geology for a producing structure.

The performance of the Big Lake field has served as a great temptation for both major companies and independents, and wildcatting has been unusually brisk in Reagan and adjoining counties with expectations of picking up a production trend leading away from the original field. Reagan County has exacted a toll of 38 deep dry holes since the discovery of oil in the county, while two of these failures were made by the Big Lake Oil Company in defining the western and southwestern edge of its leases, and four were drilled on the east side of the field by the Texon Oil & Land Company, including a 6000-foot test.

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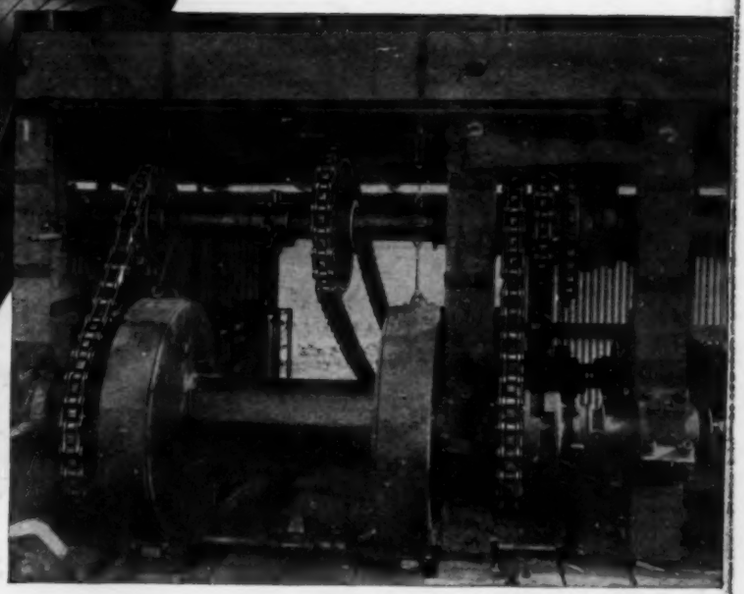

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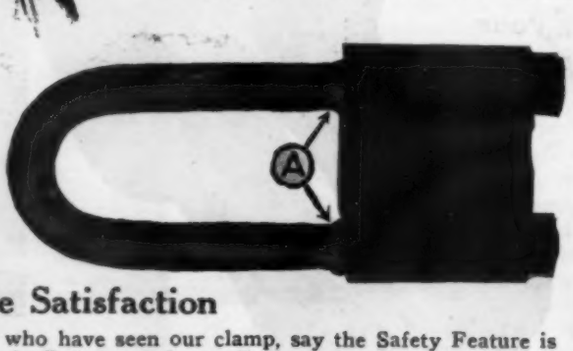
OLD STYLE CLAMP (Above)

For a number of years the old style C. C. Clamps have been used, which have caused numerous accidents, in the Pumper having his hand or fingers caught between the head of the U bolt and the clamps as shown at "C". In many instances the finger has been broken or crushed very badly.

SAFETY C. C. CLAMP (At Right)

In our Safety C. C. Clamp the dangerous condition has been eliminated as can be seen at a glance at "A", with the upset collar in the U behind the clamp, the clamp is held in place and cannot slide back on the U while the well is unhooked.



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95% of the practical oil field Superintendents and pumpers, who have seen our clamp, say the Safety Feature is one of the best ideas out, as there is so much hooking on and off the pumping wells.

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OIL FIELD SUPPLIES—Specializing in Swaged Nipples, Bull Plugs and Pumping Outfits.

WEATHERFORD, TEXAS

Somerset Field Has Settled Production With No Sign of Playing Out

Operators concern themselves with keeping operating costs on small wells at reasonable figure

THERE are a number of fields in Texas that appear only in production reports. They are old, settled fields, long past their peak output, and they generally show a decline from year to year. Among these fields is the Somerset district, southwest of San Antonio. Somerset differs in this respect, however. Its output varies only a few barrels from year to year, and there is no sign of production playing out. The field has 892 wells, all of them producers. The output last month was 66,851 barrels, an average of 2,227 barrels daily, or about 2.4 barrels per well.

The field is not seeing much drilling now, and it has not averaged more than one or two completions a month for the past two or three years. A few of the bigger companies operating in the field keep one rig running, but these are generally on inside locations. The structure is well outlined and there is very little testing being done.

Somerset is approximately 17 miles in length and averages three-quarters of a mile in width. All wells are pumped twice daily, except a few that are being flowed. There is very little gas pressure in the field and what gas is produced is used as fuel for drilling.

The field is served by a four-inch line to the Grayburg refinery at San Antonio. This refinery has 6000 barrels capacity. There are also two small topping plants in the town of Somerset, near the field. Also Elliott-Jones operates a refinery in San Antonio.

Somerset crude averages about 34 gravity, but runs as high as 41 in a few instances. It yields about 30 per cent gasoline, straight run, and gives a much larger percentage when cracked.

Production is obtained from the Taylor Marl at an average depth of 1500 feet.

Drilling

Drilling presents no difficulties, but is fairly hard during the first 600 feet. Each well averages one set of rock cones. There are no water troubles and drilling water is plentiful. Casing is set on top of the first oil sand, cemented, and then the well is drilled in. Perforated liner is used instead of screen.

Most of the oil produced is pipe-line oil, but on the southwest side of the field a slight amount of paraffine trouble is encountered. This is not serious, however, and is taken care of by washing the wells with distillate as often as the paraffine chokes the liner.

The producing formation is very hard packed and is 160 feet thick in some places. Tightness of the pay is responsible for the small output of Somerset wells, but it is also assurance of long life for the field.

Average cost of completing wells in the field is about $3500 and this includes putting them on the pump, but does not take in taxes, depreciation, etc. It is also based on figures furnished by a company that does its own drilling. A turnkey job drilled by a contractor would probably cost in the neighborhood of $5500.

About the only possibilities for an extension to Somerset is toward the southwest where the structure is believed to extend for about five miles. Acreage in this direction is largely controlled by one operator, and he has not yet seen fit to develop it. One or two wells have been drilled on this tract and were said to have had unusual showings of both oil and gas.

One striking thing about Somerset is the effort spent on trying to get the best possible returns from the small wells. As one operator put it, the size of production obtained from new wells hardly justifies them being drilled, and it is considered more economical to spend a little extra on keeping the old wells in the best possible condition and thereby getting the maximum production from them. The operator mentioned plans to spend an average of $1000 per month for the next five or six months in experimenting on new methods of cleaning out and washing his wells, with the hope of boosting their yield.

GEORGE H. GAY

Who was in charge of blocking acreage for the Transcontinental Oil Company in the new Nigger Creek section of Central West Texas. Mr. Gay is one of the most popular land men in this part of the country.

Medina County

Outside the Somerset field most of the interest in the San Antonio district is centered south of the shallow Ina field, in Medina County. Henderson and Holden have four gas wells shut in on the J. F. Adams tract, and these wells are looked upon as the forerunner of oil production. The No. 4 well made 21,000,000 cubic feet from a gas sand found between 940 and 947 feet. The other wells, Nos. 1, 2, and 3 each made about 7,000,000 cubic feet from the 910-foot sand. These four wells are the first gassers of any consequence in this district and have created much interest in drilling.

Several wildcat tests have been put down on the strength of the gas wells: The California-Medina Oil Company drilled a hole to 3125 feet, but reported no show. J. R. McCalder got the Austin Chalk in a test on the Thompson tract at 2500 feet. In the extreme western part of the county the Adams Drilling Company plans to test to the Edwards Lime on the J. Kennedy tract. Armstrong et al are now putting down two tests, one on the J. W. Long tract and the other on the J. W. Tracey.

In the Ina field proper there are 12 wells with a combined output of less than 100 barrels. The oil is very heavy and averages about 17 gravity. It makes good lubricating oil but is very difficult to refine. Production depth is 900 feet. This field is 14 miles southeast of the town of Hondo, and about six miles northwest of Devine. Up to this time no company has thought production possibilities sufficient to warrant a pipe line and what oil that is shipped goes out in tank cars.

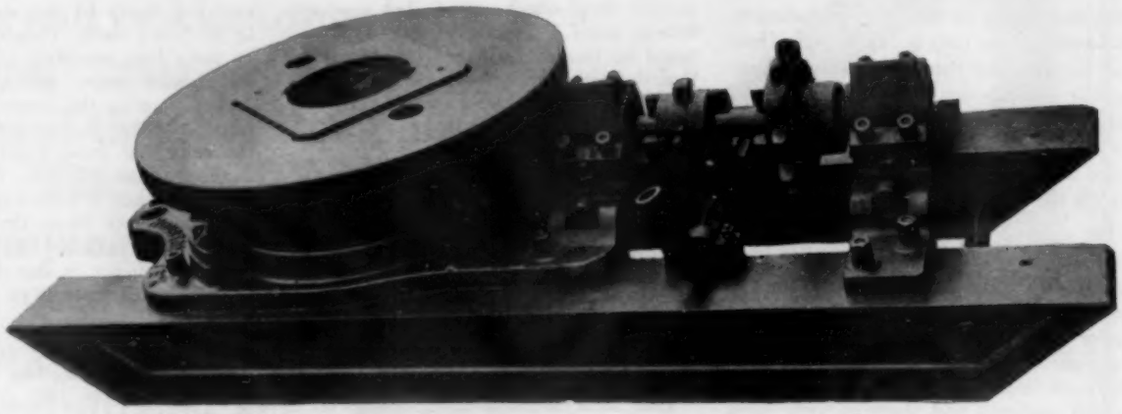
Most of the drilling is in Survey 13 on the Edmund C. Durst tract.

In the general vicinity of the Medina activity there are a few scattering wells and the entire territory is believed to have production possibilities. However, drilling up to this time has not brought to light any oil of consequence.

East of San Antonio about 18 miles in Bexar County, the Marland Oil Company recently abandoned a test at 2676 feet, in the Glenrose. The well is located on a 7000 acre block under lease by Marland, and was drilled on the Joseph Mihalski farm, M. Bastillos Survey.

It is said that Marland was not satisfied with the cores taken in the well and has moved in a heavy diamond coring outfit and intends to drill structure tests over the entire block.

HOUSTON, TEXAS NEAL LUCEY COM



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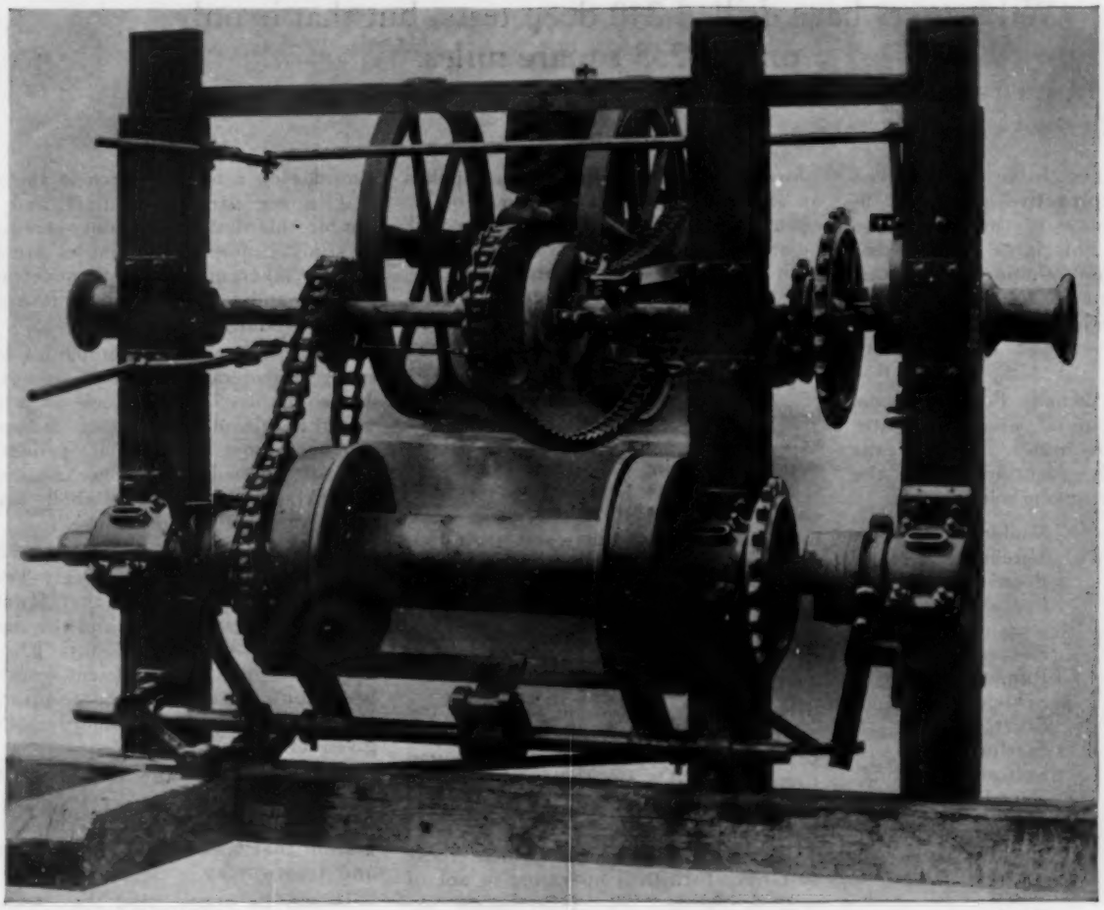

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COMPANY HOUSTON, TEXAS

Say you saw it in The OIL WEEKLY

West Texas Has Large Area of Prospective Oil Country Yet Untested

Wildcatters have drilled 240 deep tests, but that is only one to 233 square miles

By Roye Munsell
Staff Representative

THE most extensive semi-proven virgin prospective territory in Texas today is, probably, the West portion. This large general district is really not confined to Texas, but extends some considerable distance into the state of New Mexico. This vast expanse covers at least 100,000 square miles.

That portion which lies in Texas comprises 33 counties, or approximately 55,932 square miles. The Texas counties usually identified with the West district are given below.

Andrews	Midland
Brewster	Mitchell
Coke	Pecos
Concho	Presidio
Crane	Reagan
Crockett	Reeves
Culbertson	Runnels
Ector	Schleicher
Garza	Scurry
Glasscock	Sterling
Howard	Sutton
Hudspeth	Terrell
Irion	Tom Green
Jeff Davis	Upton
Kent	Val Verde
Loving	Ward
	Winkler

Operators have, apparently, not looked askance on this vast territory. To date more than 300 deep wildcat tests have been drilled in it, and the present drilling report shows some 175 wildcat wells now in the several stages of operation. A detailed list of these drilling wells, with their status, is carried elsewhere in this issue.

Many Deep Tests

Since the first exploration work of any kind was done in West Texas, some 240 deep dry holes have been drilled in the general area. In addition to these there has been about 50 shallower tests drilled from time to time in Culberson, Reeves and Pecos Counties.

Among the deep tests which proved productive, not a few turned out to be discoveries of more or less consequence. Although up to the present time, the really large wells have been pretty well confined to the Big Lake field of Reagan County, production has not limited itself to that particular area by any means.

Two hundred and forty failures may appear to be a goodly number any way you look at them, but it is well to keep in mind that the general area being explored covers 33 counties, which makes an average of only about seven to the county. Figured another way it would be one failure to every 233 square miles.

In spite of the fact that an average of seven deep dry holes have been drilled per county, or about one to every 233 square miles of territory, there is still a vast amount of virgin and semi-proven territory between failures to allow for the discovery and development of a field that will equal or surpass the Big Lake field.

The Big Lake field, which was discovered May 28, 1923, has been very productive and is well worth trying to duplicate.

A total of 38 deep dry holes have been drilled in various outlying parts of Reagan County in the effort to discover a nearby field of the proportions of Big Lake.

It certainly cannot be said that the expense, whatever it might have been, of drilling these 38 tests in Reagan County and the 200 additional ones in other portions of Central West Texas has been for naught.

The sub-surface data which these test have furnished operators is not of a little value. The information accumulated from the dry hole records is worth much in making the locations for future exploration wells.

Sub-Surface Data

Many of the major companies in West Texas have come to recognize the need of increased sub-surface data to guide them in their development of that area, and, at some expense, are maintaining a force of men in the several active parts to collect and assemble this data as it is uncovered and to study conditions. Samples are frequently taken of formations penetrated, and oils and waters found for thorough scientific study.

In not a few cases, companies have spent considerable sums of money in deepening dry holes, which as a rule would be abandoned on their failure to produce from the usual producing horizon, in order to secure additional sub-surface information which might prove valuable for future use.

In spite of all of the work which has, apparently, been done in West Texas, it can, probably, be said that Mitchell County, Reagan County and the northern part of Crockett County are the only areas in which sufficient work has been done to supply adequate information as to the future possibilities of any given district.

Below is given the record of deep dry holes drilled in West Texas on which it was possible to secure information that was believed to be reliable and trustworthy.

It can be appreciated that some of the wells were drilled several years ago, and that errors are likely to have crept into their records, provided, of course, they were accurate in the first place.

Every effort has been made, however, to check from as many sources as possible the list and data given here, in order to secure the maximum completeness of the list and accuracy of the data.

West Texas Field Production

San Angelo, Texas.—The current production of the various individual fields in the West Texas district, with the total number of active producers and combined initial production is listed below:

	Active Producers	Combined Initial Production	Current Production
Crane County	6	1,305	990
Crockett County	17	2,560	1,135
Garza County	1	5	...
Howard County	6	365	160
Iatan-Mitchell County	3	220	95
Loving County	1	25	10
Mitchell County	90	.....	3,410
Reagan County	107	154,895	30,100
Sterling County	1	20	5
Scurry County	4	170	55
Upton County	26	6,600	4,060
Totals	262	166,165	40,020

WEST TEXAS DRY HOLE RECORD

BREWSTER COUNTY

Company, Farm, Well No., Location—	Elev.	Top Salt	Top Lime	Depth Abn.
Arco Dev. Co., Kokernot 1, NE¼ Sec. 139, Blk. 10, GH&SA Sur.	....	....	....	3510

COKE COUNTY

Allen & Chatting, Arledge 1, NE¼ Sec. 262, H&TC Sur.	2220	....	....	3380
Bouquet & Barnett, Westbook 1, NW¼ NWc Sec. 117, Washington Co. R.R. at Tennyson	1853	....	....	3005
Robert Lee Oil Co. Stroud 1, SW¼ Sec. 22, Green McClesky Sur.	1882	....	....	3270
Transcontinental Oil Co., Saul 1, SW¼ Sec. 479, H&TC Sur	1880	....	....	3776
West Tex. Oil Co., Blackwell 1, NW¼ Sec. 274, H&TC Sur.	....	....	....	1323
West Va. Oil Marketing Assn. Mims 1	....	....	....	3513

CONCHO COUNTY

R. C. Dutton et al's W. O. Schultz 1, C SE¼ Sec. 127, T&NO sur, Blk. 72	1808	....	....	1404
Dome Prod. Co., Hartgroves 1, Sec. 350, D. Schrader Sur.	....	....	....	1430
T. Koester 1, Sec. 2, Koester Sur.	....	....	....	1410
Schultz Oil Co., W. O. Schultz 1, C Sec. 128, Blk. 172, T&NO Sur.	....	....	....	1408
W. O. Schultz 2, C Sec. 127, Blk. 172, T&NO Sur.	....	....	....	3220
Signal Oil Co., Waring 1, Sec. 2035, J. W. Gothard Sur	....	....	....	3202
T. B. Slick et al, Sims 1, Sec. 115, Patented Lands	....	....	....	3009
The Texas Co., Houston Bros. 1, Sec. 264, J. J. Nickel Sur.	....	....	....	3640
Texas-Meers Oil Co., Hargrove 1, Sec. 232, Negedonk Sur.	....	....	....	1500
Hargrove 2, Sec. 1693, J. W. Mathee Sur.	....	....	....	1950
Hargrove 3, Sec. 1693, J. W. Mathee Sur.	....	....	....	1836

CRANE COUNTY

Cordona O. & P. Co., Cowden 1, C SE¼ Sec. 14, Blk. 2, H&TC Sur.	2398	665	2565	4241
Cosden et al, Connell 1, Sec. 15, Blk. 22, PSLD Sur.	2802	950	3290	4020
Gilliam et al, Penix 1, C NW¼ Sec. 42, TP Ry Sur., Blk. 42	2820	1600	....	3410
Marland Oil Co., Hughes 1-A, Sec. 2, H&B Co. Sur.	2468	475	....	3100
Cowden 1, C NW¼ Sec. 34, CCSD&RDNG Sur., Blk. X	2490	800	2785	3483
Penn-Tex Dev. Co., Cowden 1, Sec. 14, Blk. X, CCSD &RGNG Sur.	2586	950	2810	3010
Tex. Dev. Co., Cowden 1, Sec. 53, Blk. X, CCSD& RGNG Sur.	2446	595	2550	3820

CROCKETT COUNTY

J. C. Cook et al, Univ. 1, Sec. 14, Blk. 29	2800	1270	2034	3253
J. S. Cosden et al, Noelke 1, Sec. 39, Blk. GG, HE& WT Sur.	2232	640	....	3275
Crockett Drlg. Synd., Shannon 1, SE¼ Sec. 22, B. O. Herendez	2677	945	2349	4270
Shannon 2, SE SE Sec. 9, GC&SF Sur.	2431	800	1600	3005
Massey 1, Sec. 28, GC&SF Sur, Blk. UV	2418	....	1110	3535
J. S. Cosden et al, Univ. 1, NEc NW¼ Sec. 34, Blk. 12	2760	1150	2525	3135
Gulf Prod. Co., Thompson 1, R. M. Collins Sur, A-32, Blk. HH	2331	555	....	2732
Uni-Powell 1, Sec. 31, Blk. 12, UL Sur.	2756	1181	2709	2840
Humphreys Corp., Univ. 1, Sec. 5, Blk. 29	2268	....	1585	4391
Humble O. & R. Co., Harris Bros. 1, Sec. 12, Blk. 3, Washington Co. RR Sur.	2836	1208	2950	3111
Kanawha-Angelo Oil Co., Univ. 1, Sec. 9, Blk. 52, Univ.	2435	....	1130	3105
Mid-Kan. & Trans., Harris 1, Sec. 20, Blk. HH	2805	1190	2902	3505
Marland O. Co., Todd 1, Sec. 25, GC&SF Sur., Blk. WX	2449	....	....	3010
Plateau Oil Co., Friend 1, NW¼ Sec. 12, Blk. G, GC&SF Sur.	2300	....	....	3521
Republic Prod. Co., Todd 1, NW¼ Sec. 17, Blk. WX, GC&SF Sur.	2515	820	1650	3201
Ryan Pet. Co., Henderson 1, SW¼ Sec. 6, Blk. CD, GC&SF Sur.	2810	....	....	5908
Levi Smith, Univ. 1, Sec. 23, Blk. 6	2572	1080	....	3165
Southwest Pet. Co., Patrick 1, Sec. 23, Blk. OP GC&SF Sur.	....	....	....	450
Southwest Pet. Co., Pierce 1, Sec. 131, Blk. O GH&SF Sur.	....	....	....	395

CULBERSON COUNTY

Ben Andrews, Dillahunter 1	3382	....	1810	....
California Co., Grisham 1, Sec. 18, Blk. 91, P S Lands	....	....	....	4010
Grisham et al's Grisham 1, Sec. 5, Blk. 93, P S Lands	....	....	....	3420
Grisham et al's Flood 1	3279	....	2150	....
Grisham et al's Foster 1	4279	....	1512	....
Owen-Grisham Jones 1	4426	....	....	....
Pure Oil Co., Quaid 1	3919	....	....	4430

ECTOR COUNTY

Farmer Oil Co., Newham 1, Sec. 23, Blk. 42 T&P Ry. Sur.	2934	....	....	1076

EDWARDS COUNTY

Empire Gas & Fuel Co., Rust 1, SE¼ Sec. 11, Blk. 2 T&P Sur.	....	....	....	3635
Transcontinental Oil Co., Peterson 1, Sec. 82, Blk. 3, HE&WT Sur.	2360	....	....	3965

FISHER COUNTY

Mineola Oil Co., Lanius 1, NE¼ Sec. 49, Blk. 23, T&P Sur.	2260	....	....	3190
McColl et al, Harris 1, Sec. 12, H&TC Sur., Blk. B-B2	....	....	....	650
H. F. Wilcox, Banow 1, NW¼ Sec. 12, Blk. T, T&P Sur.	2062	....	....	3532

GARZA COUNTY

Gulf Prod. Co., Slaughter 1, Jasper Hays Sur.	....	....	....	4525
Mid-West Explor. Co., Rogers 1, Sec. 93, H&GN Sur., Blk. 5	2359	535	....	3381
Marland et al, Connell 1, C SE¼, Sec. 55, GH&H Ry. Sur. Blk. 5	....	....	....	3494

GLASSCOCK COUNTY

Assoc. P. & R. Co., Brunson 1, Sec. 8, Blk. 35	2521	2130	3350	3600
Cushing Ranch & Drlg. Association, Cushing 1, SW¼ Sec. 30, Blk. 30, W&NW Sur.	2551	....	2035	4480
Choate & Henshaw, Neal 1, C SE¼, Sec. 27, Blk. 33, T&P Sur.	2771	....	2430	3302
General Oil Co., McDowell 2, SE¼ Sec. 34, Blk. 34, T&P Sur.	2521	....	....	745
General Oil Co., McDowell 4, SW¼, Sec. 34, Blk. 34, T&P Sur.	2531	....	....	3782
General Oil Co., Neal 1, NW¼, Sec. 31, Blk. 33, T&P Sur.	2645	....	....	2810
Gulf Prod. Co., McDowell 2-C, SWc SE¼ Sec. 30, Blk. 34, T&P Sur.	....	....	....	3902
Gulf Prod. Co., McDowell 1-C, Sec. 35, Blk. 34, T&P Sur.	....	....	....	3910
Hoover's Sparkman 1	2661	....	2165	3200

HOWARD COUNTY

Big Springs Prod. Co., Quinn 1, NW¼ Sec. 21, Blk. 34, T&P Sur.	2487	2835	2870	3725
Capps-Lucas, Lucas 1	2285	735	1940	....
Fensland Oil Co., Read 1, NE¼ Sec. 27, Blk. 30, T&P Sur.	2407	1338	....	2180
General Oil Co., Read 1, NE¼ Sec. 28, Blk. 30, T&P Sur.	2261	....	....	3290

(*Continued on page 104*)

WEST TEXAS DRY HOLE RECORD

(*Continued from page 103*)

Company, Farm, Well No., Location—	Elev.	Top Salt	Top Lime	Depth Abn.
General Oil Co., Roberts 1, Sec. 24, Blk. 32, T&P Sur.	2459	1030	2410	3150
General Oil Co., Johnson 1, SW¼ Sec. 35, Blk. 32, T&P Sur.	2496	....	....	3370
General Oil Co., Sandhill 1	2474	2470	2615	....
Maxwell & Johnson, Capps 1, SW¼ Sec. 13, Blk. 30 T&P Sur.	2278	....	....	3256
IRION COUNTY				
Denny & Andrews et al, Hughes 1, NW Sec. 738, Blk 3, H&TC Sur.	....	....	....	1470
Kirby Pet. Co., Cattle 1, Sec. 3047, Blk 24, H&TC Sur.	2527	900	1835	2700
Oklavania Oil Co., Sawyer Cattle Co. 1, C NW¼ Sec. 106, Blk. 14, H&TC Sur.	2397	750	1540	2706
Orient Oil Co., Sugg 1, Sec. 27, Blk. 2, H&TC Sur.	2365	....	....	1860
Reynolds O. & R. Co., Tankersley 1, E¼ Sur. 723	2200?	....	....	720?
Va. Tex. Pet. Co., Case 1, Sec. 1227 GC&SF Sur.	2414	....	1210?	3062
Va. Texa. Pet. Co., Noelke 1	2384	....	1240	3502
LOVING COUNTY				
Lockhart & Co., Johnson 1, Sec. 12, Blk. 57, T&P Sur.	2892	775	....	3508
Pinal Dome Corp., Means 1, Center Sec. 23, Blk. C-26	2927	925	2995	5208
Ramsey Oil Co., Russell 1, Sec. 80, Blk. 1 N&NW Sur.	2631	700	3920	4580
MARTIN COUNTY				
Humble O. & R. Co., Slaughter 1	....	1510?	....	4335
MIDLAND COUNTY				
M. Agrees et al, Jones 1	2850	....	....	755
McCasky & Weaver, Bryant 1, NEc Sec. 9, Blk. 39 T&P Sur.	2788	....	....	4478
Rook-Zimmerman, Hill 1	2687	1655	....	....
States Oil Corp., Bryant 1	2920	1870	4420	....
MITCHELL COUNTY				
Barnum & Henshaw et al, Scott Estate 1, SE¼ Sec. 32, Blk. 17, SP Sur.	2270	1195	1750	3111
California Co., Morrison 1-A, Sec. 27, Blk. 28	2117	875	1490	5305
Colo.-Tex. Pet. Co., Foster 1, NEc Sec. 43, Blk. 29, T&P Sur.	2245	1310	1760	2620
Crescent Drlg. Co., N. L. Smith 1, Sec. 33, T&P Blk. 27	....	....	....	3082
California Co., Richardson 1, SE¼ Sec. 64, Blk. 27 T&P Sur.	2103	....	1220	4617
Eddleman et al, Gist 1, SE Cor. Sec. 21, T&P Sur., Blk. 3	2094	....	1410	3401
Fensland Oil Co., Badgett 1, Sec. 62, H&TC Ry. Sur. Blk. 97	2208	885	1415	3250
Flesher Synd., Coleman 1, Sec. 69, Blk. 97, T&P Sur.	2228	1220	1675	....
W. B. Green et al, Ellwood 1, C NW¼ Sec. 5, SP Ry. Sur., Blk. 18	2050	1035	1215	3950
Gulf Prod. Co., Crawford 1, Sec. 14, O'Keefe Sur.	2212	960	1470	3865
Magnolia Pet. Co., Foster 1, NWc Sec. 18, Blk. 29	2242	860	1650	4086
Magnolia Pet. Co., Coleman 1, Sec. 4, Blk. 26, H&TC	....	....	....	3875
Marland Oil Co., Schumacher 1, Sec. 15, T&P Sur. Blk. 29 T 1-S	2209	1120	1610	3377
N. W. Oil Co., Coleman 1, Sec. 68, H&TC Blk. 97	2198	915	1595	3302
Maxwell & Johnson, Jones 1, NE Cor. Sec. 32 H&TC Sur., Blk. 26	2211	635	1985	3205
Maxwell & Johnson, R. H. Stewart 1, SW Cor. Sec. 32, T&P Sur., Blk. 39 T 1-N	....	....	....	3202
Mid-Kansas O. & G. Co., Elwood 1, Sec. 19, Blk. 16, SP Sur.	2025	....	....	3768
Reno Tex. O&L Corp., Conoway 1, NE¼ Sec. 21, Blk. 28, T&P Sur.	2115	....	....	3242
Sloan et al, Scott 1, C NE¼ Sec. 6, LN Co. Sur., Blk. 19	2112	955	1455	3600
Travellers Oil & Dev. Co., Landers 1	2270	705	1260	....
Underwriter's Prod. Co., Smith 1	2090	750	1400?	....
Western Pet. Co., Brennand 1	2226	1000	1750	....
M. Snyder et al, C. A. Keith, SE Cor. NW¼ Sec. 10, T&P Sur., Blk. 28, T 1-N	....	....	....	3192
Mitchell Co. Oil Corp., W. H. Badgett, Sec. 62, H&TC Blk. 97	....	....	....	1070
PECOS COUNTY				
Adams Oil Co., Devlin 1, M. Ashmore Sur.	....	....	....	1004
Ark. Fuel Oil Co., Blackstone-Slaughter 1, Sec. 11, Blk. T	2856	1125	1800	3395
Alexander Synd., Montgomery 1, Sec. 6, Blk. 1, GC&SF Sur.	....	....	....	1670
Bethlem Tex Oil Co., Corder 1, Sec. 51, Blk. 2, CCSDRGNG	2591	1040	2190	3405
Bower et al, University 1, Sec. 24, Blk. 26, Univ. L.	2667	....	....	1700
Bower et al, Bennett 1, Sec. 592, GC&SF Sur.	....	....	....	1025
Calumet & Arizona Copper Co., No. 2, Sec. 19, Blk. 140 T&SL Sur.	....	....	....	576
Circle Oil Co., Harrell 1, NE¼ Sec. 25, Blk. 127 T&SL Sur.	2813	1020	1900	....
Dixie Oil Co., Hershenson 1, Sec. 6, Blk. 51, T&P Sur.	3279	2710	3905	....
Dixie Oil Co., Serbino 1, Sec. 51, Blk. C-4	2871	980	....	1725
Ft. Stockton Synd., Tyrrell 1, Sec. 602, P. H. Fall Sur.	2667	....	....	1165
Gulf Prod. Co., White & Baker 1, SWc SE¼ Sec. 85, Blk. 194, GC&SF Sur.	3091	1055	2470	4280
Humphreys Co., Sherbino 1, Sec. 51, GC&SF Blk. "C-4"	....	....	....	3740
Humphreys Co., Sherbino 2, Sec. 55, GC&SF Blk. "C-4"	....	....	....	1025
Pinal Dome Oil Co., Delvin 1, Sec. 208 Burleson Sur.	2791	1660	3320	....
Plymouth Oil Co., Perry 1	2614	710	1440	2990
Polk Prosp. Co., Rooney 1, Sec. 18, Blk. 140 T&St.L	2682	....	....	1218
Oregon-Texas Drlg. Synd., Turney 1, Sec. 19, Blk. 140, T&St.L	....	....	....	3520
E. R. Reilly et al, Noelke 1, Sec. 4, Blk. 193, Tex Newcom Sur.	2298	....	....	3206
Republic Prod. Co., Perry 3, Sec. 6, Blk. Z, TC Sur.	2591	800	1620	2365
South States, Oden 1, Sec. 108, Blk. 3, T&P Sur.	3190	....	....	1205
S. W. Pet. Synd., Hilstead 1, Sec. 210, SAMG Sur.	2726	....	....	1328
Levi Smith et al, Devlin 1	....	....	....	1310
Tex. Top Oil Co., White & Baker 1, C Sec. 11, Blk. 2, TC Sur.	2569	745	1950	3225
Transcont. Oil Co., Sherbino 1, Sec. 41, GC&SF Sur.	2853	930	....	1700
Trans-Pecos Oil Co., Turney 1, Sec. 19, Blk. 140, T&StL	2578	....	....	2830
Trans-Pecos Oil Co., H. Johnson 1, SW Cor. Sec. 20, T&StL Sur., Blk. 140	....	....	....	3026
Trans-Pecos Oil Co., Bennett 2, Sec. 592, Blk. 105, GC&SF	2562	....	....	....
Trans-Pecos Oil Co., Showers 5, Sec. 6, Blk. 114, GC&SF Sur.	2877	....	....	1825
U. S. & Mex. Tr. Co., Buena Vista 1, Sec. 23, Blk. 2, H&TC	2400	....	1400	1414
REAGAN COUNTY				
Associated Oil Co., Univ. Land 1, NW¼ Sec. 2, Blk. 6 Univ.	2728	1300	3290	3500
Ark. Fuel Oil Co., Univ. Land 1, Sec. 9, Blk. 6 Univ.	2675	1200	3135	3355
Brandon & McCamey, Univ. Land 1, NW¼ Sec. 27, Blk. 2 Univ.	2660	1027	2970?	3219
Big Lake Oil Co., Santa Rita 6, SE¼ SEc. 3, Blk. 2 Univ.	2744	....	....	3265
Big Lake Oil Co. Santa Rita 7, NE¼ Sec. 27, Blk. 1, Univ.	2837	1252	3140	3370
Crockett Drlg. Co., Univ. Land 1, SW¼ Sec. 9, Blk. 9 Univ.	2657	1150	3012	3502
Cogdell-Mascho, Univ. 1, NW¼ Sec. 23, Blk. 8 Univ.	2856	1350	3092	3200
Chas. Davis (Cont.), Grayson 1, NW¼ Sec. 28, Blk. 8, Univ.	2909	1480	3080	3710
California Co., Univ. Land 1, NE¼ Sec. 13, Blk. 8	2851	1340	3110	4100
Dunning et al, Sugg 1, C Sec. 185, Blk. 2 T&P	2656	1070	2525	3502

(*Continued on page 106*)

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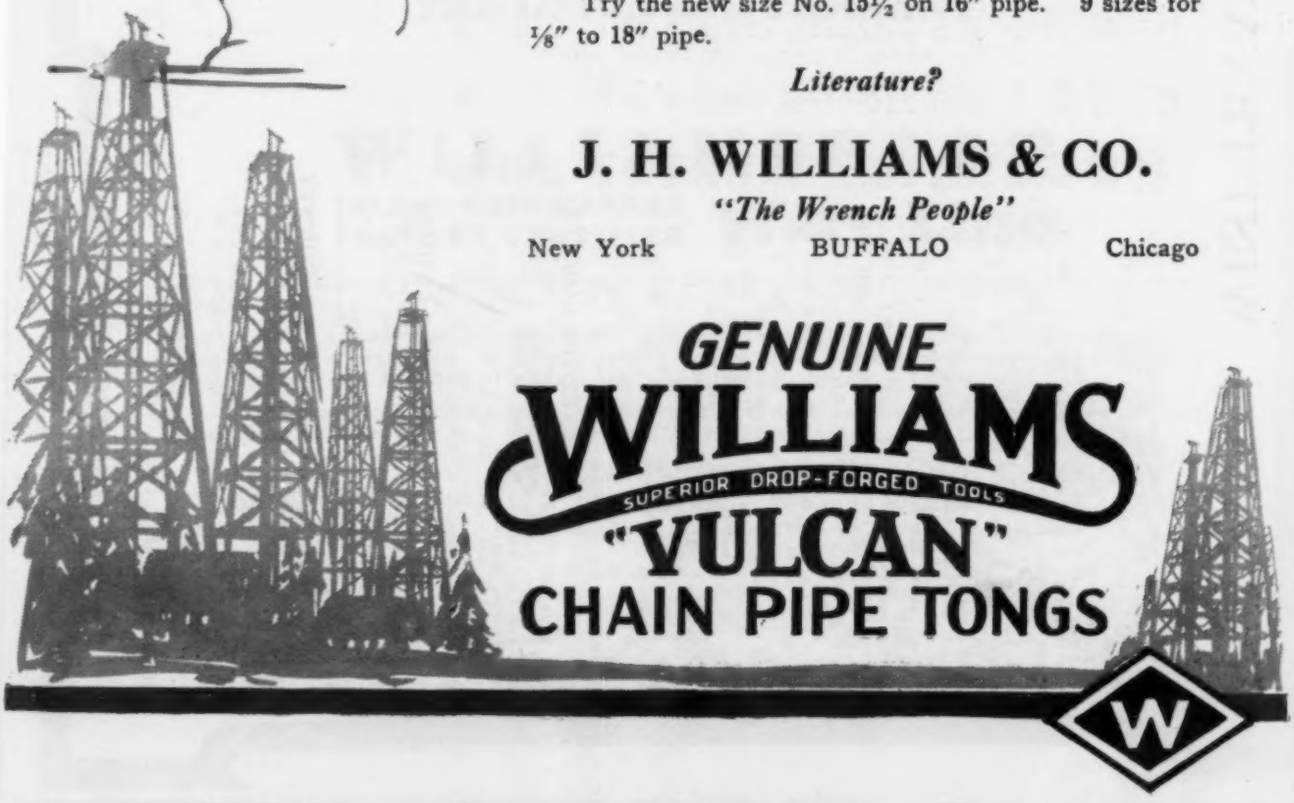


WEST TEXAS DRY HOLE RECORD

(*Continued from page 104*)

Company, Farm, Well No., Location—	Elev.	Top Salt	Top Lime	Depth Abn.
Sawyer 1, SEc SW¼ Sec. 93, Blk. 1	2485	1020	2110	3501
Gulf Prod. Co., State-Campbell 1, NW Cor. Sec. 1, Blk. 1	2919	1405	3065	3320
State-Sowell 1-B, Sec. 28, Blk. 58	2661	1100	2850	3199
Univ. 2, C S L SE¼ Sec. 1, Blk. 1	....	....	....	3255
Pete Hoffman et al, Univ. 1, NEc Sec. 23, Blk. 11..	2709	1032	2765	3200
Humphries Corp., Sawyer 1, SE¼ Sec. 69, Blk. 1 T&P	2572	950	2345	3003
J. K. Hughes et al, Univ. 1, SWc Sec. 5, Blk. 9.....	2665	....	....	3388
J. P. Johnson et al, Univ. 1, SW¼ Sec. 13, Blk. 9....	2654	1130	3100?	3105
Humble O. & R. Co., Sawyer 1, SW¼ Sec. 93, Blk. 1, T&P	2484	....	....	3501
Mid-Kansas, Hughes-Mason 1, SE¼ Sec. 1225	2586	1071	2855	3397
Marland Oil Co., Cole 1, Sec. 1 Roach Sur.	2593	1218	....	1786
Wilson 1, Sec. 1199 CCSD&RGNG	2625	1250	3300	3502
McGuire et al, Merchant 1, C NE¼ Sec. 12 Blk. A, LS&V Sur.	2701	1205	3040	3507
Mid-Kansas-Trans't McIntosh 1, NWc Sec. 1228....	2657	1230	3090	3433
Milham Expl. Co., Univ. 1, Sec. 23, Blk. 1	2950	1425	3240	3355
Peer Oil Corp., Sawyer Cattle 1, C SW¼ Blk 1, T&P	2552	925	1945	2711
Pilot Oil Corp., Univ. 1, NW¼ SW¼ Sec. 11, Blk. 9	2663	1245	3150	3300
Riley & Slack, Univ. 1	2586	990	2735	3206
Simms Oil Co., Sawyer Cattle Co. 1, Sec. 12, Glass Sur.	2570	910	2420	2465
Ben Simms et al, Univ. 1, Blk. 11	2670	1015	2520	3115
L. V. Tannerhill et al, Univ. 1, Sec. 10, Blk. 11....	2638	1109	....	3345
Texas Co., Sugg 1, C Sec. 107, Blk. 2 T&P	2619	870	2118	3252
Transcontinental Oil Co., Univ. 1, Sec. 10, Blk. 1....	2935	1470	3200	3615
Texon Oil & Land Co., Univ. 1, SWc Sec. 22, Blk. 9	2553	1220	3110	6002
Univ. 2, C SW¼ Sec. 26, Blk. 9	2754	....	....	3185
Univ. 3, C NW SW Sec. 35, Blk. 9	2753	1260	3025	3202
Univ. 4, NW Cor. Sec. 26, Blk. 9	....	....	....	3010
T. & P. R. R. Co., Walters 1	2733	1200	3230	3265
Wrightsman et al, Ingram 1, SE¼ Sec. 39, Blk. C L&SV	2649	1325	3275	3330
F. P. Zoch & Marland, Talley 1, C NE¼ Sec. 5, GC&SF Sur.	2613	1060	....	3212

REEVES COUNTY

Deep Rock Oil Co., Tatum 1, Sec. 40, Blk. 58, Tsp. 7	3737	....	3555	3892
Dixie Oil Co., Bell 1, SW¼ Sec. 20, Blk. 2, H&GN..	2552	2520	3745	4512
Prod. Oil Co., Ross 1, W½ Sec. 16, Blk. 59 PSL....	3165?	....	3000	4100
San Martine, San Martine 1	3656	....	2390	....
Sunshine Oil Co., Van Horn 1, Sec. 17, Blk. 4, H&GN Sur.	2619	....	....	2685
World Oil Co., Harris 1, NW¼, Sec. 39,	3945	1185	2930	3768

RUNNELS COUNTY

Safety First Oil Co., Allen 1, SE¼ Sec. 432 Christa Sur.	1738	....	....	4000
Sillix-Rainwater et al, Krubber 1, Sec. 164, Wash. Co. Sur	....	....	....	500
Gulf Prod. Co., Russell 2, Jones Hughes Sur.	1641	....	....	2545
Winters Oil Co., Seal 1, Sec. 267 S. F. Hardman Sur.	....	....	....	3761

SCHLEICHER COUNTY

Paragon Oil Co., Boyd Ranch 1, NWc Sec. 5, GH&SA Sur.	2265	....	....	3778

SCURRY COUNTY

The Cal. Co., Wood 1, Lot 3, O'Keefe Sub-Div., J. P. Smith Sur.	....	....	....	3734

STERLING COUNTY

Chicago Tex. O. & G. Synd., Durham 1, SW¼ Sec. 18, Blk. 12, SP Sur.	2424	....	1410	....
Cogdell & Ford, Foster 1	2391	....	....	....
Deep Rock Oil Co., Clark 1, NE¼ Sec. 17, H&TC Sur. Blk. 15	2429	....	....	3011
Chas. Harty et al, Reynolds-Harty 1	....	....	....	3299
Kanawah-Angelo Oil Co., Clark 1, C SW¼ Sec. 9, GC&SF Sur. Blk. A	2242	....	885	3365
Clark 2	2225	....	....	....
Chas. Northup et al, Ellwood 1, Sec. 59, SP Sur.	2240	1155	1385	3202
Chas. Pettit et al, Reynolds 1, NE¼ Sec. 9, Blk. 22 H&TC Sur.	2623	....	1930?	3002
Rummel et al, Clark 1, SEc 10, R. R. Wade Sur.	....	....	....	1430
Sterling Pet. Co., Brennard 1, NWc Sec. 130, Blk. 2, H&TC Sur.	2494	1190	1705	3300
Texas Elkhorn Oil Synd., Sturm 1, C Sec. 127, Blk. 6, H&TC Sur.	2271	....	....	4155
Richardson 1	2305	....	1300	....
White Eagle O. & R. Co., Mills 1, C NE SE Sec. 33, Blk. 22, H&TC Sur.	2640	....	1950	3259
C. J. Wrightsman et al., Foster 1, Sec. 2, Blk. A, GC&SF Sur.	2611	930	2150	3002
Hull 1, Sec. 6, Blk. A, GC&SF Sur.	2615	1030	2105	3501
Collins 1	2495	....	1653	3013

TAYLOR COUNTY

Allison et al, Hamilton 1, Sec. 45, Blk. 1 SP Sur. ..	1903	....	....	1570
Burford & Brimm, Buttram 1, SW¼ Sec. 7, Blk. 19	2165	....	....	3001
Frank Fox, Land 1, SE SE Sec. 15	1824	....	....	3340
J. H. McBride, 4 miles N. Abilene	....	....	....	2503
Sanger O. & R. Co., Hole 1, Sec. 41, L. A. Landis...	....	....	....	3655

TOM GREEN COUNTY

Burford Brien et al, Sec. 541 Schuman Sur.	2070	....	....	2860
Denny et al, Broome 1, Blk. 673 Wallstein Sur.	....	....	....	1000
Fannin Oil Dev. Co., Harris 1, C Sec. 170 LHC Sur...	1955	....	....	3380
Penn, Windsor et al, Turner 1, C NW¼ Sec. 60, Blk. 5, H&TC	2200	....	....	3401
Roxana Pet. Corp., Clark 1, Sec. 5, Blk. a GC&SF Sur.	2224	....	....	3065
San Diego Oil Co., Clegg 1, C Sec. 878, Blk. 16 H&TC	2130	....	....	3636
S. W. Pet. Co., Cain 1, Sec. 11, White Sur.	1909?	....	....	4312

TERRELL COUNTY

Pittsburgh-Western, Dowill 1, Sec. 9, Blk. R2, GC&SF Sur.	3113	....	....	1250

UPTON COUNTY

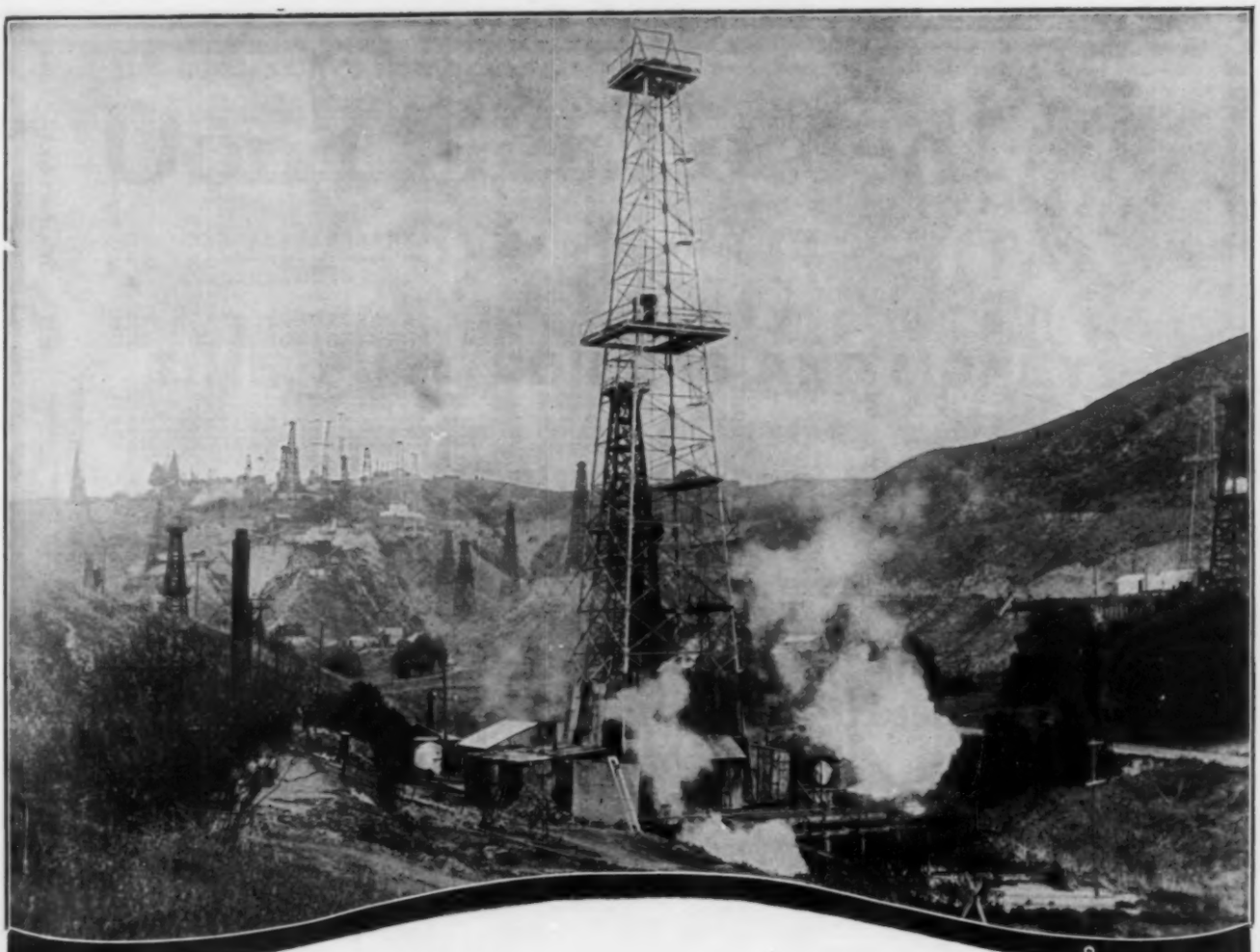
Ball & Reagan, Univ. 1	2655	1195	3800	3503
Big Mesa Oil Co., Univ. 1, C NW¼ Sec. 17, Blk. 3..	2784	1095	....	3425
Choate & Henshaw, Noelke-Murphy 1, SW¼, Sec. 20, Blk. B-2, GC&SF Sur.	2545	690	3263	3140
Eastland Oil Co., Hughes 1, SWc Sec. 12, CCSD& RGNG Sur.	2549	590	2156	2328
Germany et al, Halff 1, Sec. 50, Phillips Sur.	2652	1414	....	3600
Hults et al, Halff 1, SEc SW¼ Sec. 76, Blk. Y TC...	2808	1580	....	3250
Kirby Pet. Co., Union Ld. Co. 1, NE¼ Sec. 51, Blk. 45 H&TC	2529	500	2070	3305
Plateau O. & G. Co., Union Ld. Co. 1	2533	555	2040	3085
Tidal Oil Co., Union Ld. Co. 1, Sec. 2, GC&SF Sur...	2550?	553	2098	2245
Upland W. W. Co., Upland 1, Sec. 14, Blk. 4	2705	1100	....	....
Virginia-Tex. Co., Univ. 1, SE¼ Sec. 14, Blk. 15....	2412	1055	3397	3740
Zoch et al, Union Ld. Co. 1, Sec. 4 Hearne Sur. Blk. A-B	2702	800	2270	3211
Ruhman 1, C NW¼ S½, Sec. 100	3180	1500	3100	3500

VAL VERDE COUNTY

Cost Oil Co., "Green Well" 1	....	....	....	3503

WARD COUNTY

Art. Pitts Oil Co., River Well 1, Sec. 25, Blk. 33 H&TC	2547	1035	1512	4670
Chesapeake Oil Co., Marston, Sec. 10, Blk. B-19 PSLD	2535	845	3060	3701
Dominion Oil Co., (Art. Pitts), Soda Lake 1, Sec. 197, Blk. 34 H&TC	....	....	....	1980
Gulf Prod. Co., Hut. Stock Ass. 1	2609	825	3025	4787
Trans Pecos, Longenecher 1, NE¼ eSc. 206, Blk. 34..	2601	....	....	1710



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Shidler	Muskogee	Arkansas City	Ranger
Blackwell	Okmulgee	El Dorado	Electra
	Wichita Falls		

WEST TEXAS PRODUCING WELL RECORD

The following table gives complete information on every producing well in the West Texas district outside of the Big Lake field, Mitchell and Scurry Counties.

CRANE COUNTY

Company, Well, No.—	Elevation	Top Salt	Top Lime	Prod. Horizon	Total Depth	Date Compl.	Initial Prod.	Present Prod.	Grav. of Crude
Gulf Production Co., J. T. McElroy 1	2592	1000	2661	2728-50	2750	7-21-26	600	580	32-33
Independent O. & G. Co., Lon Taylor 1	2474	450	2030	2038-45	2045	2-24-26	140	125	29-30
Magnolia Petroleum Co. et al, University 1	2601	1145	2925	3038-40	3040	4-19-26	190	60	30-31
Marland Oil Co., W. F. Durham 1	2515	650	2235	2475-2642	2667	(PB for shot)			
E. S. Hughes 1-B	2493	540	2175	2340-73	2373	7- 7-26	70	35	30-31
E. S. Hughes 1-C	2564	665	2195	2305-35	2335	7-10-26	195	155	30-31
The Texas Co., Union 1-F	2431	690	2024	3014-16	3016	(Completing)			
Zoch & Marland Oil Co., Hughes-Keith 1	2594	728	2340	2564-74	2574	4-23-26	110	35	28-29

CROCKETT COUNTY

Company, Well, No.—	Elevation	Top Salt	Top Lime	Prod. Horizon	Total Depth	Date Compl.	Initial Prod.	Present Prod.	Grav. of Crude
Cromwell et al, L. P. Powell 1	2789	1135	2570	2644-65	2669	3- 1-26	360	175	29-31
L. P. Powell 2	2809	1161	....	2668-92	2692	4-30-26	175	125	29-31
L. P. Powell 3	....	1160	2605	2654-69	2669	5-26-26	160	125	29-31
L. P. Powell 4	2811	1160	....	2655-64	2695	7-10-26	150	135	29-31
Gulf Production Co., L. P. Powell 1-A	2795	1140	2580	2650-73	2673	5-20-26	75	55	29-31
L. P. Powell 2-A	2818	1175	2608	2655-99	2699	6-14-26	60	40	29-31
L. P. Powell 3-A	2810	1150	2590	2668-83	2683	5-30-26	270	75	29-31
J. K. Hughes Dev. Co., L. P. Powell 1-A	2812	1170	....	2654-59	2659	6- 5-26	250	25	29-31
L. P. Powell 1-B	2767	1140	2596	2635-41		(Completing)			
Humble Oil & Refining Co., P. J. Sorg 1	2757	1130	2594	2651-80	2680	2-20-26	30	15	29-30
Humble-Marland Oil Co., L. P. Powell 1	2809	1173	2572	2644-47	2647	6- 8-25	25	10	28-30
L. P. Powell 2	2814	1205	2593	2656-84	2716	10-20-25	100	70	28-30
L. P. Powell 3	2812	1170	2563	2660-2723	2734	1-17-26	85	30	28-30
L. P. Powell 4	2785	1128	2585	2647-55	2655	6- 1-26	120	30	28-30
L. P. Powell 5	2781	1155	....	2635-42	2642	7-10-26	150	40	28-30
L. P. Powell 6	2809	1174	....	2655-64	2664	6-27-26	400	110	28-30
L. P. Powell 7	2813	1178	2590	2660-65	2665	6-10-28	15	30	28-30
Roxana Petroleum Corp., L. P. Powell 1	2811	1160	2600	2658-63	2663	5-20-26	135	45	30-32
The Texas Company, J. S. Todd 1	2672	1038	....	1695-1705	2102	4-24-26	1 mil. ft. gas, Shut in		

GARZA COUNTY

Company, Well, No.—	Elevation	Top Salt	Top Lime	Prod. Horizon	Total Depth	Date Compl.	Initial Prod.	Present Prod.	Grav. of Crude
Emerald Oil Company, J. M. Boren 1	2354	....	1665	2450-2516	2600	5- -26	5	SD	37-38

HOWARD COUNTY

Company, Well, No.—	Elevation	Top Salt	Top Lime	Prod. Horizon	Total Depth	Date Compl.	Initial Prod.	Present Prod.	Grav. of Crude
Choate-Henshaw & Marland Oil Co., M. H. O'Daniel 1	2232	....	1670	2640-2705	3103	5-12-26	65	10	29-31
Deep Rock Oil Co., Scott-Hyman 1	2353	....	1887	2705-35	3605	(Co after shot)			29-31
Fred Hyer et al, H. R. Clay 1	2630	....	....	1542-62	1566	11-21-25	50	10	33-34
Lockhart & Co., et al, Otis Chalk 1	2414	....	....	1553-86	1586	(Completing)			32-33
Magnolia Petroleum Co., Otis Chalk 1	2419	....	....	1570-1606	1608	7-12-26	100	60	32-33
Marland Oil Company, Otis Chalk 1	2440	....	....	1604-10	1610	7-10-26	55	50	32-33
Owen-Sloan Oil Co., Otis Chalk 1	2430	....	....	1578-83	1586	4-18-26	70	30	33-34
Otis Chalk 2	2421	....	....	1565-1607	1607	SD after small shot			

LOVING COUNTY

Company, Well, No.—	Elevation	Top Salt	Top Lime	Prod. Horizon	Total Depth	Date Compl.	Initial Prod.	Present Prod.	Grav. of Crude
Lockhart & P. V. Pet. Co., J. J. Wheat 1	2645	772	....	4212-72	4272	9- 1-25	25	10	38-39

MITCHELL COUNTY

Company, Well, No.—	Elevation	Top Salt	Top Lime	Prod. Horizon	Total Depth	Date Compl.	Initial Prod.	Present Prod.	Grav. of Crude
The California Co., W. L. Foster 1	2397	....	1710	2810-32	2950	(Completing)			28-29
Magnolia Petroleum Co., Mary Foster 1	2342	....	1750	2858-72	2872	8-18-25	150	35	28-29
W. W. Watson 1	2331	....	1745	2850-70	3176	2- 3-26	45	35	28-29
A. P. Watson 1	2332	....	1750	2866-72	2891	5-20-26	25	25	28-29

STERLING COUNTY

Company, Well, No.—	Elevation	Top Salt	Top Lime	Prod. Horizon	Total Depth	Date Compl.	Initial Prod.	Present Prod.	Grav. of Crude
H. D. Rummel et al, L. T. Clark 3	2337	....	....	1173-75	1175	6- -26	20	5	31-32

UPTON COUNTY

Company, Well, No.—	Elevation	Top Salt	Top Lime	Prod. Horizon	Total Depth	Date Compl.	Initial Prod.	Present Prod.	Grav. of Crude
Dixie Oil Company, A. S. Burleson 1	2616	575	2088	2188-2219	2230	3- 7-26	25	5	29-31
A. S. Burleson 2	2624	565	2040	2185-91	2230	4-15-25	5	SD	29-31
A. S. Burleson 3	2675	598	2185	2206-11	2234	5-23-26	85	50	29-31
A. S. Burleson 4	....	590	....	2210-60	2260	(Completing)			29-31
A. S. Burleson 5	2586	500	2090	2125-82	2182	7-10-26	40	35	29-31
E. S. Hughes 1	2501	470	1981	2067-93	2093	6- 1-26	45	30	29-31
E. S. Hughes 2	2505	435	2020	2025-49	2049	7- 4-26	3000	2075	29-31
Gulf Production Company, M. L. Baker 1	2610	555	2065	2172-2224	2224	6-23-26	40	10	29-31
Sanger Bros. 1	3119	1130	2684	2751-80	2805	(Showing oil)			
Independent Oil & Gas Co., A. S. Burleson 1	2616	575	2085	2168-2210	2231	4- 8-26	10	SD	29-32
Emma Wooley 1	2500	440	1935	2025-96		(Completing)			29-31
Marland Oil Company, Benton 1	2495	540	2170	2348-63	2363	5- 2-26	100	18	29-32
A. S. Burleson 2	2615	555	2140	2178-2230	2230	5- 5-26	50	10	29-32
A. S. Burleson 3	2595	535	2045	2111-40	2140	5- 2-26	225	72	29-32
A. S. Burleson 4	2608	555	2130	2165-2225	2225	7- 1-26	25	15	29-32
A. S. Burleson 5	2592	535	2085	2107-46	2146	7- 6-26	220	185	29-32
A. S. Burleson 6	2588	525	2090	2114-45	2145	7- 7-26	200	140	29-32
A. S. Burleson 7	2589	515	2085	2096-2130	2130	7-10-26	265	235	29-32
A. S. Burleson 8	2602	543	....	2117-52	2152	7-10-26	345	280	29-32
A. S. Burleson 1-A	2580	522	2090	2124-64	2176	7-10-26	35	40	29-31
Sanger Bros. 1	2608	575	2150	2208-30	2230	3-20-26	75	28	29-31
Sanger Bros. 2	2616	555	2160	2180-2225	2245	5- 2-26	50	7	29-31
Sanger Bros. 3	2606	535	2150	2180-2226	2232	7- 5-26	15	15	29-31
Sanger Bros. 4	2601	570	2125	2157-2225	2225	7- 1-26	40	15	29-31
Sanger Bros. 5	2589	540	2115	2164-2215	2215	7- 5-26	25	15	29-31
Sanger Bros. 6	2670	610	2150	2194-2228	2228	7-11-26	1500	710	29-31
Sanger Bros. 7	2684	609	2195	2224-78	2280	7-20-26	85	50	29-31
Republic Prod. Co. and Marland Oil Co., M. L. Baker 1	2613	590	2083	2161-2220	2271	9-30-25	70	15	28-30
M. L. Baker 2	2617	565	2142	2190-2252	2252	6- 5-26	25	5	28-30
M. L. Baker 3	2670	600	....	2250-81	2281	(Completing)			28-30

WINKLER COUNTY

Company, Well, No.—	Elevation	Top Salt	Top Lime	Prod. Horizon	Total Depth	Date Compl.	Initial Prod.	Present Prod.	Grav. of Crude
R. A. Westbrook & Co., T. G. Hendrick 1	2806	1930	....	2000-25	2025	(Co after 1 flow)			30-31

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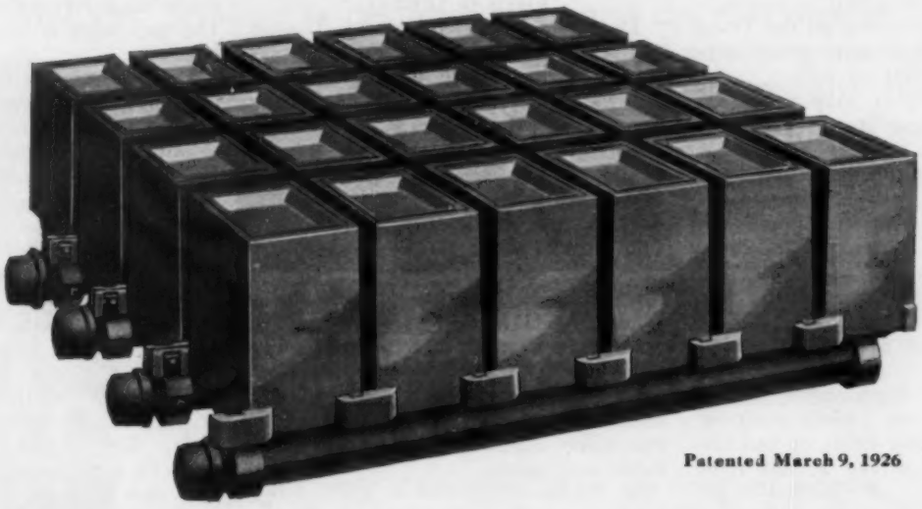

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Southwest Texas Development Retarded By Lack of Transportation

Lines now building, with anticipated better prices, will hasten development of Escarpment pools

By A. R. McTee
Staff Representative

IN Southwest Texas flanking the famous Reynosa Escarpment for about 50 miles through Webb, Jim Hogg, and a part of Zapata Counties, is a string of oil pools already well known in Texas oil history. Nearly all of them are old and have been contributing to Texas production for a good many years. Yet these pools have never really come into their own for lack of pipe-line facilities.

Pipe lines are now assured, two of them, in fact. Work on one connecting the Southwest Texas territory with deep water transportation is about half completed, and the route for the other is being surveyed. Active laying of the line will be but a matter of a few weeks. And this is only another way of saying that the Laredo, or Mirando section, as it is more generally called, is now certain to exert its influence on the Texas situation—more than five years after discovery of the first oil well.

This delay, however, may have been providential. At least it can be counted so, for had pipe lines been available with each new discovery, the territory might have been fully exploited at a time when the industry could not absorb its output. Now the increased development is in line with the situation generally, and there seems little probability that the industry will be unable to take new production as it is discovered.

This increased development is well under way in the Laredo territory. There are three new fields of undetermined size being drilled at this time, and including the wildcatting along with testing for new sands in old pools, the entire district is perhaps undergoing more activity than ever before in its history. Drilling is not confined to any one spot. Instead it extends from the Carolina-Texas field at the extreme northern tip of the proven territory, to the Randado pool, 55 miles south. Even beyond Randado there are a few wild cat tests, and one well is drilling to test the escarpment in Mexico.

What this drilling may mean in the way of new flush production can not be foretold. It is safe to state, though, that the yield from the Laredo district this year will greatly exceed that of 1925, and the output then was 3,487,618 barrels.

Fields in District

The fields comprising the Laredo district, as they appear along the escarpment from north to south, are as follows: Leaseholders field, Carolina-Texas, Mirando City-Schott, Wolcott, Mid-Ojuelos, Mirando Valley, Henne-Winch-Fariss, Randado, and Charco Redondo. Other fields in the district, but not on the escarpment, include Cole-Bruni, about 14 miles southeast of the Carolina-Texas area, and the Noleda of Piedras Pintas field, in Duval County, about three miles east of the town of Benavides, and the Palangana dome five miles northwest of Piedras Pintas. These two Duval County fields are salt dome fields and do not come in the same classification as the other fields mentioned.

The Reynosa Escarpment which is clearly defined throughout Southwest Texas.

The Cole-Bruni field is the only field in the Laredo territory proper that is not near the Reynosa escarpment. However, since the recent discovery of oil in the Carolina-Texas field, some operators believe the pay formation there may be correlated with deep showings in Cole-Bruni wells, and that the two fields may eventually be connected. This is merely supposition, though, and can not be substantiated by present geological information.

Of the other fields mentioned, Leaseholders and the Charco Redondo are the only ones not showing some activity. The Leaseholders field, about 25 miles northeast of Mirando City, has no pipe line yet, and there is no work going on at this time. The field was discovered in November, 1922, but never has been developed to any extent. The pay sand is found at about 1050 feet.

The Charco Redondo area, about 45 miles south of Mirando City, in Zapata County, is a shallow field. Production is obtained at about 150 feet and the wells do not average more than two barrels. Development in this field has never warranted even a gathering line and the area is dormant now.

Between the Leaseholders and Charco Redondo, beginning with Carolina-Texas and extending to Randado, though, there is, as stated above, much activity. On July 15 this territory had a total of 86 outfits either in operation or rigging, distributed about as follows: Drilling, 58, derricks 17, locations 10, and rigging up 1. Within the past two weeks it is safe to say that enough new wells have been started to give a total of 86 drilling now, and this does not include wildcats. Within the entire escarpment area there are probably 25 other tests drilling, the most of which can be called wildcats, bringing the total number of drilling wells in the territory up to 111.

Development Work

At the time this check was made, operations were distributed according to fields as follows: Carolina-Texas, three wells drilling, three locations and one derrick; Schott pool, one well drilling; Mid-Ojuelos pool, three wells drilling; Andrews pool, one well drilling; Aviator pool, 19 wells drilling, seven derricks, three locations; Jennings Gas field, three wells drilling; Mirando Valley pool, two wells driling; Henne-Winch-Fariss pool, seven wells drilling,

STRAINER DESIGN AND DEEP WELLS

On the Gulf Coast and elsewhere shallow fields are becoming deep sand fields.

McEvoy Strainer has been set in one of the deepest wells in the world, the Miley-Athens No. 6, 7591 feet deep, and made a good producer. McEvoy sets as easily as blank pipe.

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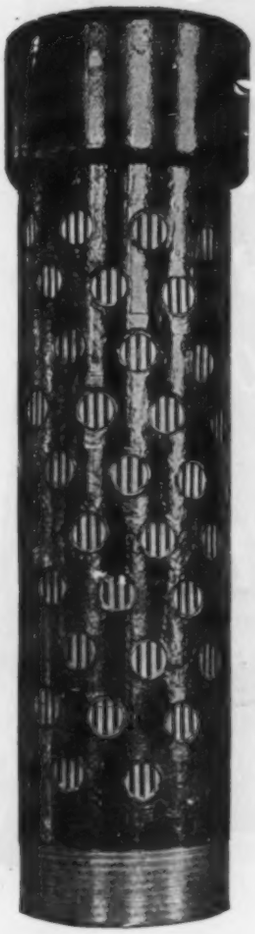
Were McEvoy inlet area reduced to that of slotted pipe, its tensile strength and collapse resistance would be superior to them. True engineering principles are involved in the placing of a group of slots within a circle. McEvoy Strainer is designed to permit the entrance of fluid and not to make the best record on a testing machine. Yet it has no fatal weaknesses which require makeshift patchwork to bolster the tensile strength of the body.



McEvoy removes no metal which has nothing to do with screening, nor does it add any metal which performs no useful task.

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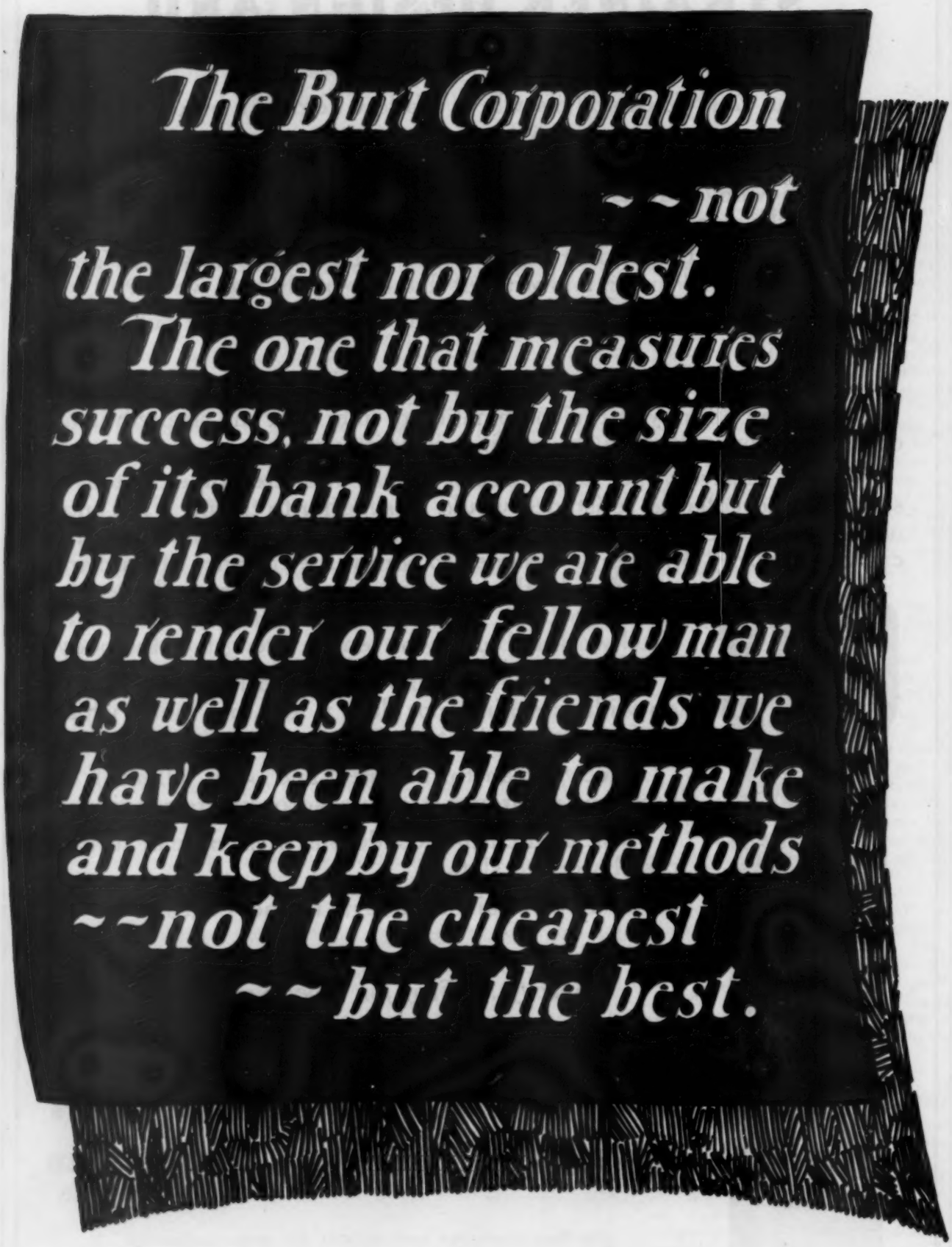
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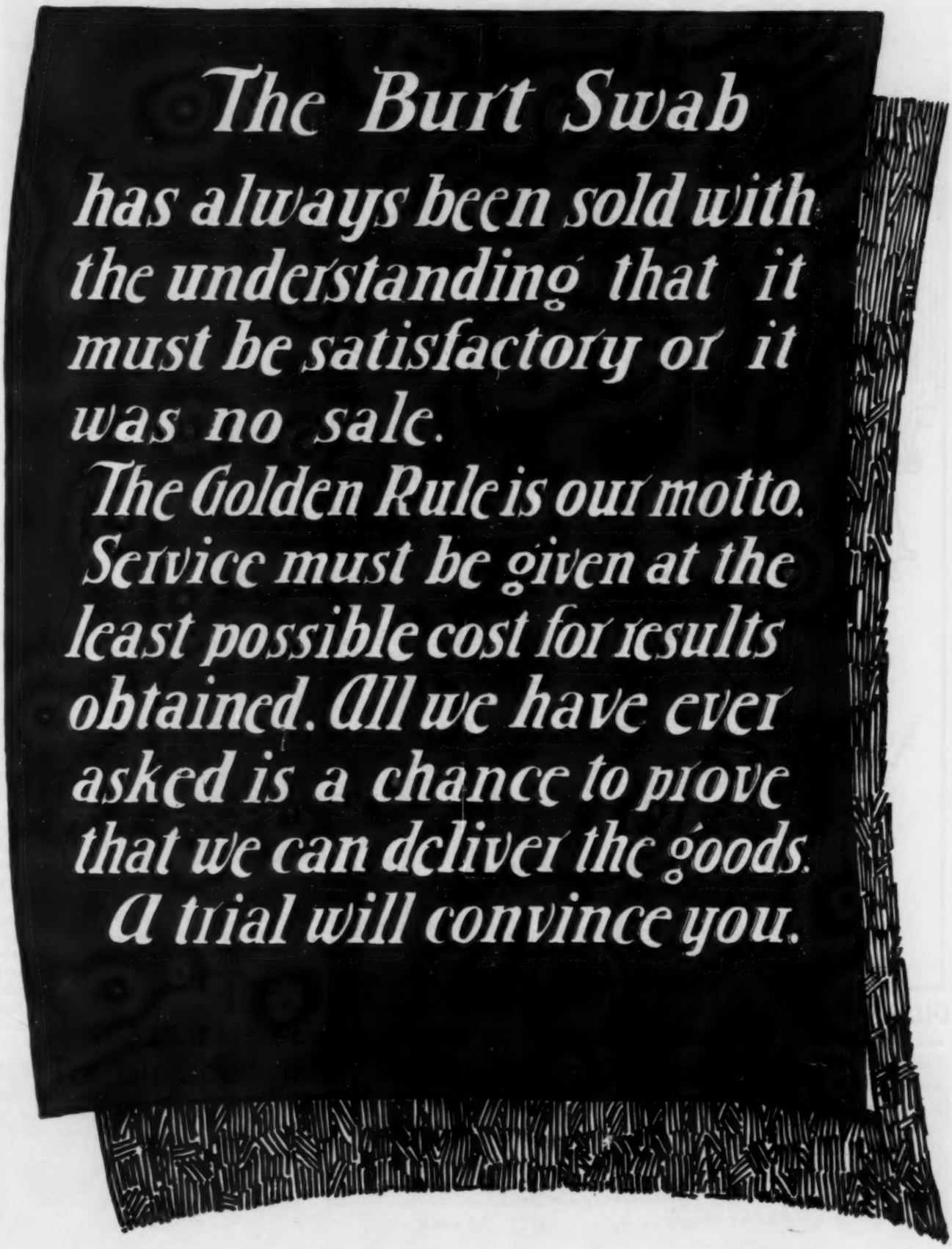
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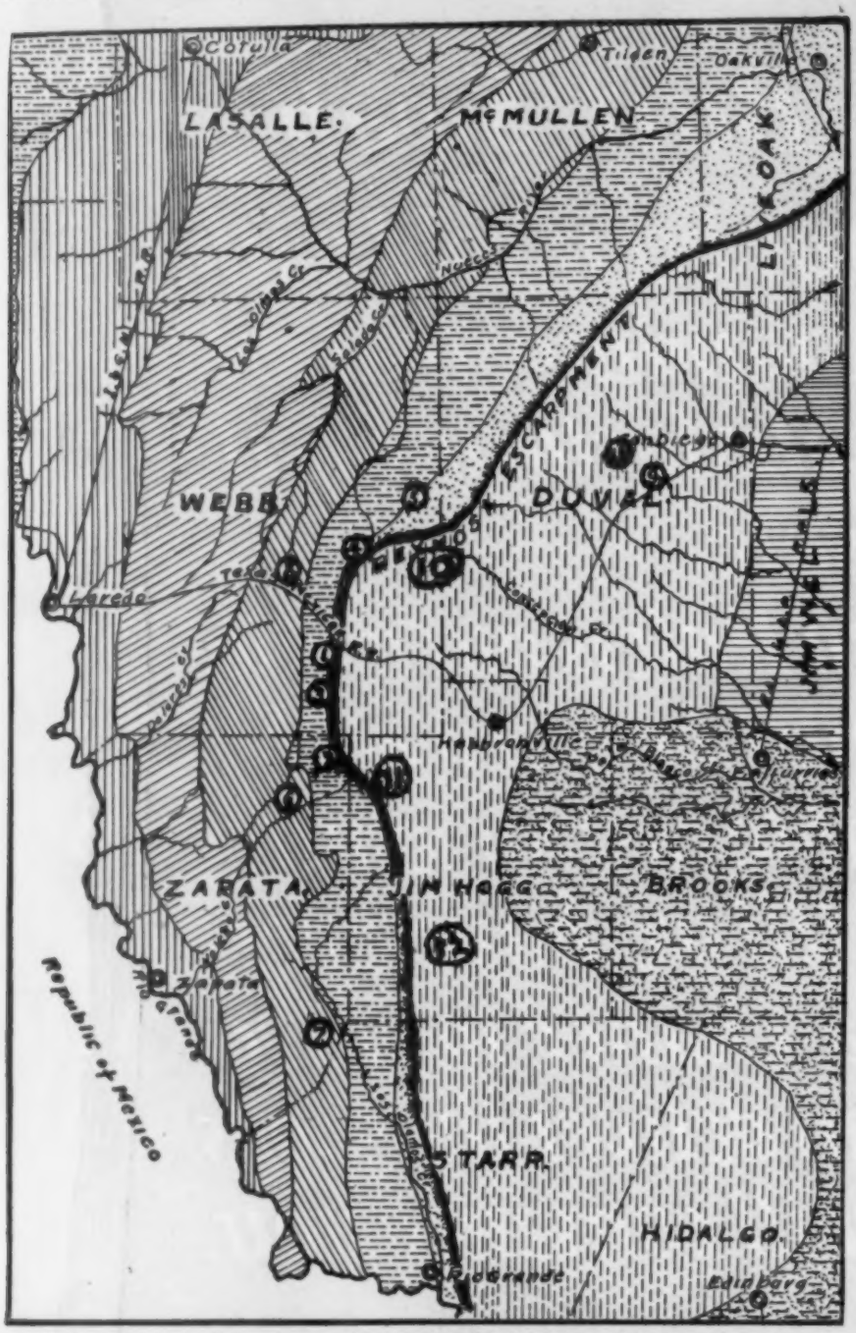
has always been sold with the understanding that it must be satisfactory or it was no sale.
The Golden Rule is our motto. Service must be given at the least possible cost for results obtained. All we have ever asked is a chance to prove that we can deliver the goods.
A trial will convince you.

two derricks; Randado pool, eight wells drilling, three locations, one rig moving in, and three derricks up for new wells; Cole pool, nine wells drilling, two locations, and two derricks.

Four wells are drilling at Piedras Pintas and two at Palangana, in Duval County.

At the end of May there were 422 producing wells in the Laredo district.



OIL & GAS FIELDS OF WEBB & ZAPATA CO'S

Recent, Sands (Fluviatile & Windblown)
Pleistocene, Lissie
Pliocene, Reynosa
Miocene Pliocene, Oakville-Lagarto
Eocene, Frio, Fayette, Yegua, Cook Mt, Mt Selman

① Shott-Mirando City Oil Field. ② Mirando Valley Oil Field. ③ Aviators Oil Field
④ Carolina-Texas Gas Field. ⑤ Leaseholders Oil Field. ⑥ Jennings Gas Field.
⑦ Charco Redondo Shallow Oil Field ⑧ Reiser Gas Field. ⑨ Piedras Pintas Shallow Oil Field
⑩ Cole ⑪ Henne-Winch-Fariss ⑫ Randado
⑬ Palangana

Map drawn by Richard A. Jones corrected to date and reprinted from the Bulletin of the Association of American Petroleum Geologists.

Total production of the district for that month was 253,349 barrels, or an average of 19.3 barrels per well. The average daily production for each field was 8172 barrels. Actual pipe line runs by fields were as follows: Schott, 34,189 barrels from 120 wells, a daily average of 1102 barrels; Aviator, 78,843 barrels from 93 wells, a daily average of 2243 barrels; Mid-Ojuelos, 13,395 barrels from 62 wells, a daily average of 432 barrels; Wolcott, 7390 barrels from 25 wells, a daily average of 238 barrels; Mirando Valley, 2177 barrels from 13 wells, a daily average of 70 barrels; Henne-Winch-Fariss, 84,680 barrels from 87 wells, a daily average of 2731 barrels; Cole, 9212 barrels from six wells, a daily average of 297 barrels, and Randado, 18,050 barrels from 10 wells, a daily average of 582 barrels.

Pipe Line Runs

Runs by companies for May were as follows: Texpata Pipe Line, 31,868 barrels; Magnolia Petroleum Company, 113,655 barrels; Humble Oil and Refining Company 45,391 barrels; Crown-Central Oil Company, 41,450 barrels; Laredo Oil Company, 1207 barrels; Houston Oil Company, 2599 barrels, and Randado Pipe Line Company, 17,177 barrels.

Total production of the entire section since its discovery, according to pipe line runs, amounts to 8,636,126 barrels.

At this time the high spots of development include three areas: The Carolina-Texas field, 14 miles northeast of Mirando City; the southern extension to the Aviators pool, about 12 miles south of Mirando City; and the Randado pool, about 35 miles south and slightly east of Mirando City. Other areas that are believed to have good possibilities for considerable new production are the St. Albans extension to the Henne-Winch-Fariss pool, and the Cole pool.

The Carolina-Texas development was discussed in the July 16 issue of *The Oil Weekly,* but since there has been a number of wells started since that time, the field will be discussed briefly: The first oil well Associated Oil Company Webster 2, was completed June 30 and flowed 746 barrels of 34.2 gravity crude during the first 19 hours through a 3/8-inch choke from 2505 feet. Four days later it had settled to about 200 barrels daily and flowed at about that rate until July 20, when it was allowed to flow at capacity for a few hours, at which time its production was at the rate of 600 barrels daily. Production has been restricted again and the size of the choke will be increased as is deemed wise. When the well was opened up it gave all evidence of increasing its output, and there has been a good deal of conjecture as to how much oil it would actually make if allowed to flow open a considerable period of time. Estimates vary from 700 to 3000 barrels.

Humble has completed its 4-inch line

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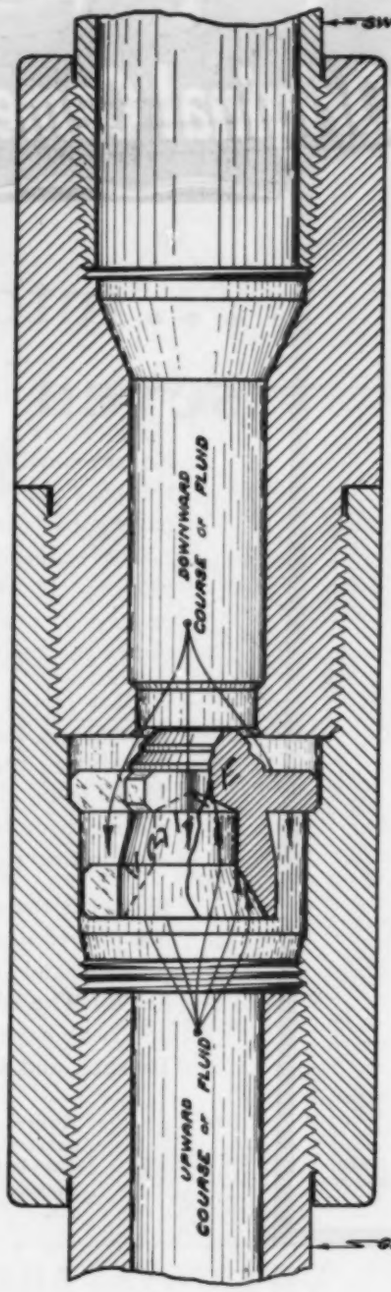

A LEFT HAND TOOL JOINT CONNECTION BETWEEN SWIVEL AND GRIEF STEM WITH VALVE CONTAINED THEREIN TO CONTROL BACK PRESSURE.

CONTROLS ALL BACK PRESSURES THROUGH DRILL PIPE.

POSITIVELY ELIMINATES BLOWING OUT OF DRILLING HOSE, PUMP GASKETS, AND SWIVEL PACKING WHEN SPUDDING.

THE PRICE OF ONE DRILLING HOSE PAYS FOR THE VALVE.

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from Bruni to the Associated well and is taking the oil. Associated has three 1000-barrel tanks at the well and Humble has one 5000-barrel tank near the well.

Since the well was completed there have been about 20 locations made and wells are drilling on four of these. About 10 other outfits are ready to spud in just as soon as drilling water can be obtained. The Associated is the only company actually making hole at this writing. This company is drilling on its offset directly to the east and also the west of the discovery well and has three other offsets about ready to spud. Associated has seven water wells in the northeast corner of survey 2082, about three miles southeast, with a potential output of 3000 barrels daily and is able to operate its rigs with this water supply. So far none of the other companies with acreage near the well have been able to obtain water, and intensive drilling of the area will be held up until this difficulty can be overcome.

It is the general belief that production in this field will be developed in a northeasterly southwestern trend and much of the acreage that changed hands was bought and sold on this hypothesis. Such an assumption is based on the general trend of all the other escarpment pools; however, as has been said of every other pool at some time or other, only the drill can tell which way the pay will go. There have been a number of wells drilled north and west of the well, but many of them did not go to the 2500-foot sand.

Moody-Seagraves interests are rigging up ready to drill a test on the northwest quarter of survey 688, one of the far out wells. On the southeast quarter of this same section Wolcott et al drilled two dry holes some time ago, but these did not go to the deep sand. In the northwest quarter of survey 678 immediately to the east of the well, the United States Oil and Gas Company has resumed drilling on its test, and the Eldorado Oil and Gas Company is to drill a test on the southwest quarter of survey 679. Both these latter wells are about a half mile from Webster No. 2.

Mirando City, oil center of the Laredo Section

Lease Deals

Acreage buying around the well is quiet now, but within the two weeks after its discovery, leasing and trading were brisk. Two tracts near the well sold for $1500 per acre, cash; other blocks nearby went for $1500, half cash and half in oil, and there was considerable acreage that changed hands where the consideration was not known. Practically all the big companies are now holders of close-in blocks and just as soon as water can be provided, there will be much drilling. Within a month there will probably be 20 wells drilling. It might be said that the field is limited only toward the northwest where the main Carolina-Texas gas field is.

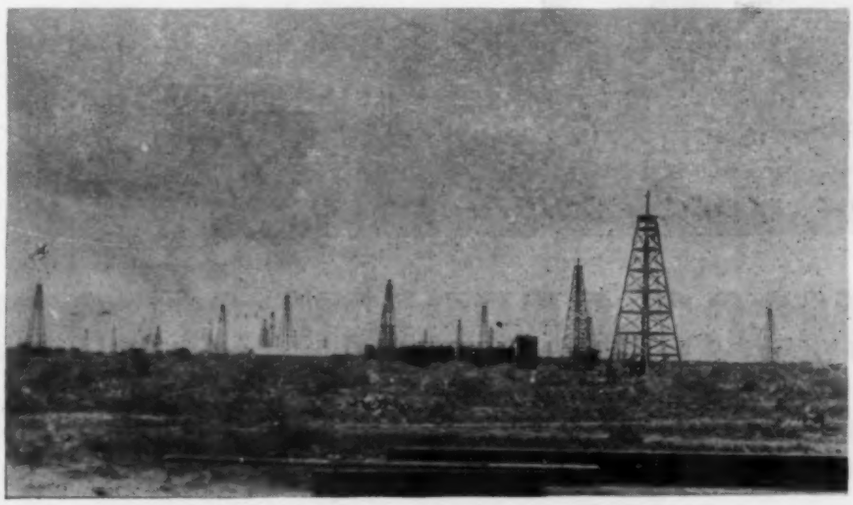
With only one producer, and that a month old, the field is entirely too young to warrant any predictions about its output, life, etc., but if it equals some of the other escarpment fields, it is destined for much development.

Aviator Pool

Coming down the escarpment, the next field where there is much new drilling is the southern extension of the Aviator pool, in Webb County. The old pool is four years old, but the southern extension was discovered early this year. About 50 completions have been drilled in this extension since then, and so far no wells have been completed that indicate the limits of the extension. There are yet several hundred feet of untested territory to the southeast and the field is growing in that direction as fast as wells can be put down. Acreage in the extension area is held in small blocks and there is a good deal of competitive drilling.

In area the Aviator pool is now perhaps the largest in the entire district. In one or two places this field widens to 14 locations, a thing which is very unusual with escarpment pools, since the average width for all pools in the district is about three locations. In many localities the production strip is only two locations wide, and in a few places it narrows to one.

This week the Associated Oil Company completed an extension to the St. Albans sector of the Henne-Winch-Fariss pool that indicates production further to the north than has yet been discovered. This well, Lopez No. 3, located in block 20, share 1, Las Animas Grant, produced 700 barrels during the first 34 hours from the 2100-foot sand. Wells Nos. 1 and 2, in block 21 of the same grant, were completed by Associated some time ago for gassers, also from the 2100-foot horizon. No. 3 is east of these two wells and will probably open a new strip for drilling. Associated holds acreage north of block 20, but immeliately east the territory is controlled by other interests. Production in the St. Albans extension is to the north of the Henne-Winch-Fariss field and extends in a northeasterly southwestern direction. A good many gas wells are along the western edge of the extension, but about eight oil producers have been drilled. The extension is about a half mile from the old field, and there is much untested acreage toward the north.



View of Randado field, looking from the north side

Randado Pool

Leaving the Henne - Winch - Fariss field, there is a break of about 18 miles

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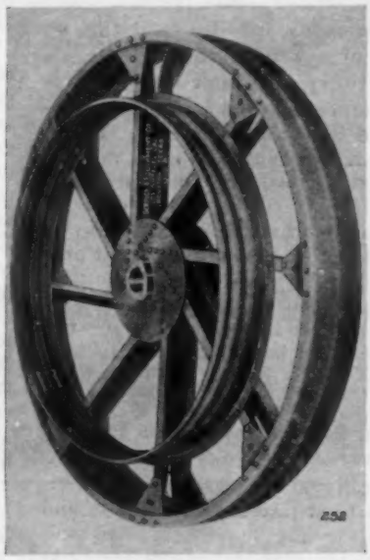

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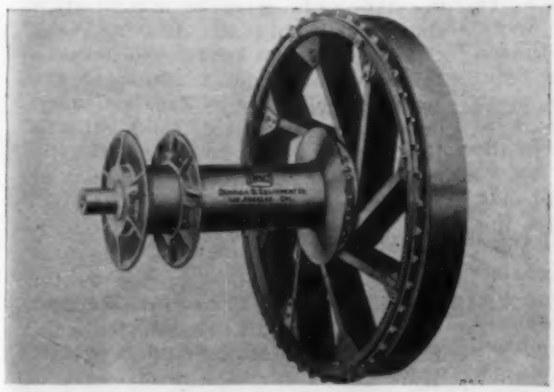

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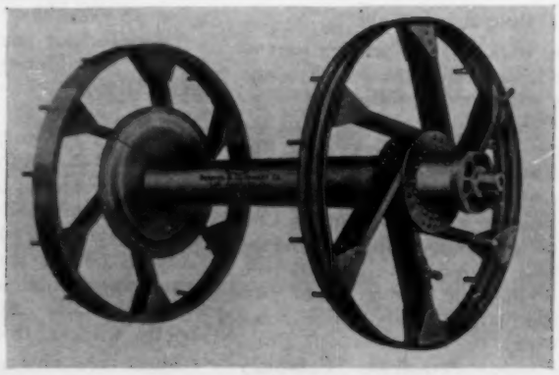

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A Complete Line of Better Oil Well Equipment

where no oil has been found, and then we come to the Randado pool. This is the southernmost field in the district that is now being developed, and it gives promise of becoming one of the big producers of the escarpment. Although discovered last spring, there have already been about 35 wells completed and a good deal of drilling is now going on. The field is now about six locations wide and three-quarters of a mile long. It is gradually being extended toward the southwest. The nearest dry hole is about six miles southwest of the present limits of Randado. Near the center of the Villa Grant, J. K. Hughes abandoned a well at 2500 feet, and Zimmerman one at 1500 feet, the two tests being about a mile and a half apart. To the southwest of these two wells abovt five miles in survey 617 there are two more dry holes drilled by the Panuco Production Company. These wells are about 15 miles from Randado. Southeast of the pool, Humble Oil and Refining Company abandoned two dry holes, both in the San Antonio Viego Grant. One of these toward the southwest corner of the survey, was abandoned at 3170 feet. Four miles to the northeast another failure was drilled by Humble in a bend of the escarpment. Just off the escarpment to the left about half way between these two wells Humble got a gasser. Four miles due south of Randado, in survey 143, Simms is shut down in its No. 1 Leyendecker. This test was spudded in May and set casing at 2090 feet. It tested water in June and later had a show of gas at 2188 feet. Total depth of the hole is 2198 feet.

Most of the drilling at Randado is in survey 291.

Cole-Bruni Field

Jumping back to the northern part of the district, the Cole-Bruni field is the next spot where new production is expected. The field is located east of the escarpment about 14 miles, near the town of Bruni, and has been producing gas in great quantities for some time. Early in February of this year the Cin-Tex Petroleum Company brought in the first oil well from a sand at 1800 feet, reported to have a production of possibly 10,000 barrels daily. Following this discovery the Houston Oil Company and Cole Petroleum Company drilled a number of wells in the immediate locality, several of which flowed for considerable time before sanding up. A few are still producing, but not at their initial output. It is generally believed, however, that the Cole field will yield big production from deeper sands and the Cole Petroleum Company is now drilling three deep tests, to go as deep as 3500 feet if necessary. These three test are about three miles apart. Recently a good showing was found in No. 10-A at about 2500 feet. This well had a fishing job and while the crew was trying to pick up a bit a very rich looking oil sand was discovered at 2500 feet. The bit could not be recovered and it was decided to skid the rig and drill another hole. There is some rumor that this sand is quite similar to that found in the Carolina-Texas well, and there is talk of probable correlation. As stated before, however, geologists are not inclined to think such a correlation possible. Cole production is the same quality crude as the old escarpment fields, about 22 gravity.

Piedras Pintas Dome

Perhaps the Piedras Pintas dome should be mentioned in discussing possibilities of new production in the Laredo territory, although this field is some distance removed from the escarpment and is a salt dome field. It has one producer, Walsh No. 4, making about 200 barrels, and four wells are drilling. There is a good deal of opinion as to what the outcome of this field will be, but it is possible that production may be found in big quantities just as has been the case in the coastal salt dome fields. Drilling so far, though, has not been altogether encouraging.

Piedras Pintas is in Duval County about three miles east of the town of Benavides.

Practically all the escarpment territory has been tested with wildcats and a glance at any up-to-date map will show dry holes on either side throughout the entire stretch of fields. These tests have been made as far back as 20 miles on either side. In a few instances slight showings of oil and gas have been reported, but the showing has generally been of slight consequence. In spite of these dry holes, though, the territory is not considered condemned for oil possibilities. Quite the contrary is true. There has been much leasing toward the southern edge of the proven territory, especially in the vicinity of Randado. Between the old pools many blocks have changed hands, some quite recently. Prices on this acreage vary, but the average is about $20. Of course land near proven territory could not be bought for this figure, but in territory considered strictly wildcat, this price is common.

There are now a good many wildcat tests drilling, the most of them on isolated locations, feeling out the possibilities of acreage back from the escarpment in both directions.

Production Depths

Production depths in the Laredo section do not vary greatly, being about as follows for the different fields: Schott, 1600 to 1700 feet; Aviator, 1700 feet; Mid-Ojuelos, 1600 to 1700 feet; Wolcott, 1600 to 1700 feet; Mirando Valley, 1450 to 1500 feet; Henne-Wich-Fariss, 2000 to 2100 feet; Cole-Bruni, 1700 to 1750 feet; Randado, 1250 to 1300 feet; and Carolina-Texas, 2505 feet.

The Carolina-Texas well is the deepest producer in the entire section and has awakened much interest in deep drilling. Already three deep tests are going down at Bruni. The Crown-Central is drilling a deep test on its Wheatly lease between the Schott and Aviator pools, and plans to case off all sands to 3000 feet. If anything interesting is discovered at that depth the hole will be carried deeper. The only deep test in the Aviator pool was drilled to the west of the field by O. W. Killam, in the southeast corner of survey 835. The hole was carried to 2800 feet without any showing of oil and was finally plugged back to make a gas well.

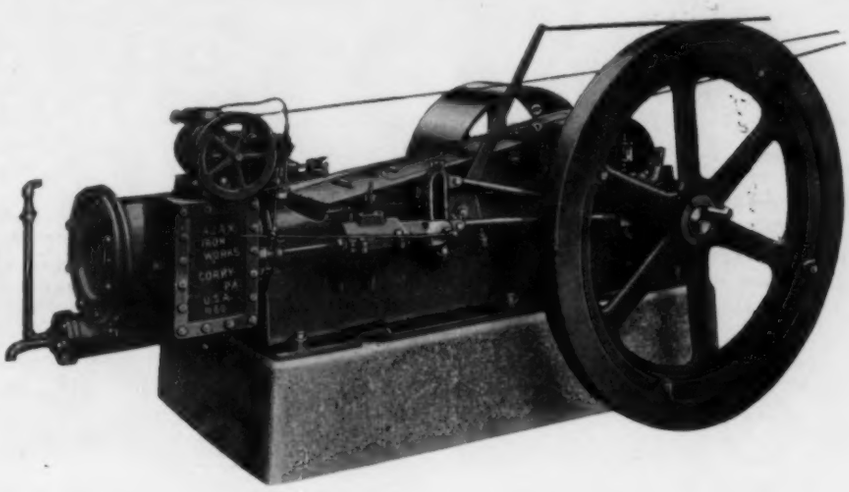
As stated before, with the exception of the Cole-Bruni field, all the major producing pools in the Laredo section are on the Reynosa escarpment. This geological feature plays such an important part in prospecting in the district that it ought to be mentioned. In his paper, "The Relation of the Reynosa Escarpment to the Oil and Gas Fields of Webb and Zapata Counties, Texas," presented before the American Association of Petroleum Geologists in 1923, Richard A. Jones, well known geologist, states that "The field evidence points to the fact that the close relation between the oil and gas fields and the escarpment is not merely a coincidence, but has structural significance." Mr. Jones describes the escarpment as follows: "Starting near Nueces River, the Reynosa escarpment trends southwestward across Live Oak County, passing through the southeastern corner of McMullen County and the northwestern part of Duval County. Entering Webb County, it bends and crosses the Texas-Mexican Railroad just west of the station of Torrecillas in a direction almost north and south. Leaving Webb County, it again bends, and takes a southeastward course through the northeastern corner of Zapata County, thence trending east of south through Jim Hogg and Starr counties to the Rio Grande, a short distance southeast of Rio Grande City.

Geology

"The escarpment is capped by the gravel, sand, and caliche of the Reynosa formation and marks the contact of the Eocene and the Miocene-Pliocene beds. It is also a drainage divide west of which the streams flow south and west into the Rio Grande and north into Nueces River, while to the east the general flow is directly into the Gulf, though at the northern end some of the drainage enters the Nueces.

"The presence of silica, causing induration of the beds at various points, and the consequent formation of the topographic features, of recesses and salients of the escarpment, with which the fields are associated, appears to be a factor closely related to the occur-

(Continued on Page 250)



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Ajax Engine refinements, of which there have been a score in the past two years, have each helped to break records for speed and economy in "making hole."

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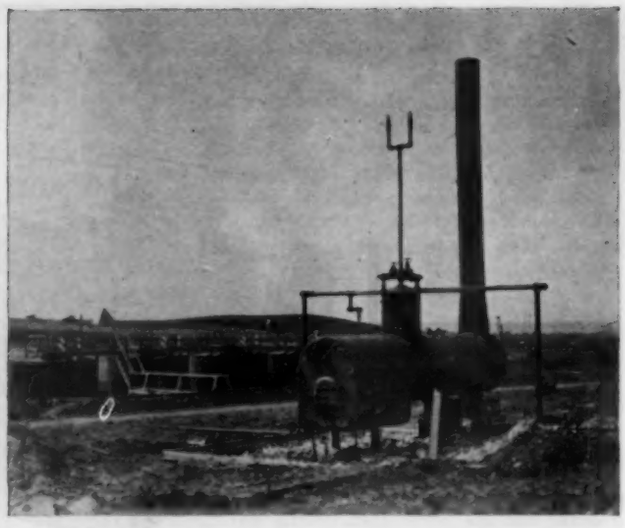


At the left are tanks on the Marland Oil Company's Burnett lease in the Panhandle equipped with steam coils to facilitate the handling of high pour Panhandle crude. At the right is a typical boiler and lease tank set-up in the Panhandle field, the steam from the boiler being necessary to keep the crude liquid in cold weather.

Panhandle Operators Developing New Operating Technique

Sub-surface conditions and character of oil present special problems

By Roye Munsell

Staff Representative

PECULIAR conditions which obtain in the Texas Panhandle field are making it necessary for the operators there to devise and develop many special operating methods in order to secure anything near maximum results at a reasonable cost.

With this end in view, several of the larger companies maintain engineers and geologists in the field to gather all possible data and study its characteristics.

The result is the gradual development of an operating technique which is sometimes new and unique.

Drilling has been almost exclusively with cable tools. Only about 20 rotary holes have been drilled in Carson, Hutchinson and Gray Counties. The results were sometimes uniformly good, sometimes rather bad, and somtimes just indifferent.

In the Gray County portion where the rotary has been, probably, the most successful, the practice is to drill down to the top of the big lime with rotary tools and then standardize, finishing with cable tools.

The cost of drilling a well in Gray County with a combination outfit is not only considerably less than with straight cable tools, but it is much speedier. If a rotary is having fair luck it can keep two strings of cable tools busy finishing up the wells.

The cost per foot of drilling with rotary tools is about $6.00. With a greater influx of rotary contractors, which can be expected soon, it is likely that the present figure will be reduced a little.

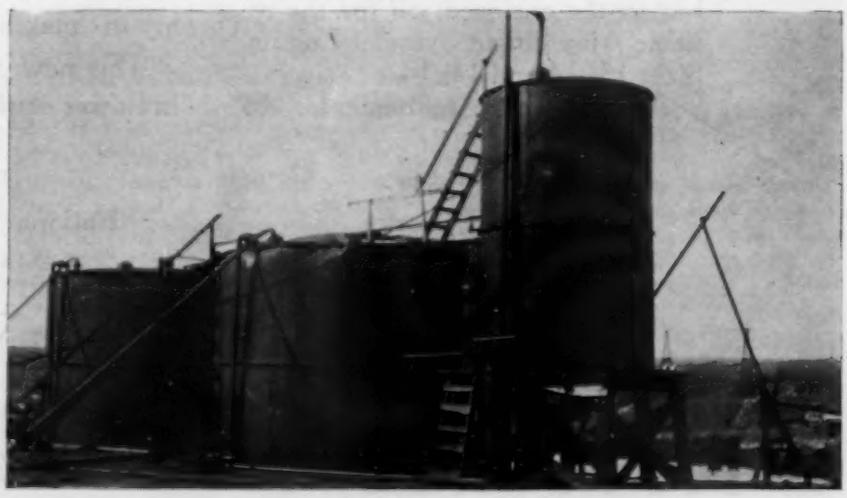
In making a rotary hole in Gray County, about 300 feet of 12½-inch casing is set for the surface pipe. The next string is an 8¼-inch which is set on top of the 2100-foot lime horizon. At this point cable tools are rigged up to continue on down to the pay, which is but a few feet deeper. The big lime is drilled through with an open hole and the 6⅝-inch set on top of the oil pay.

Casing

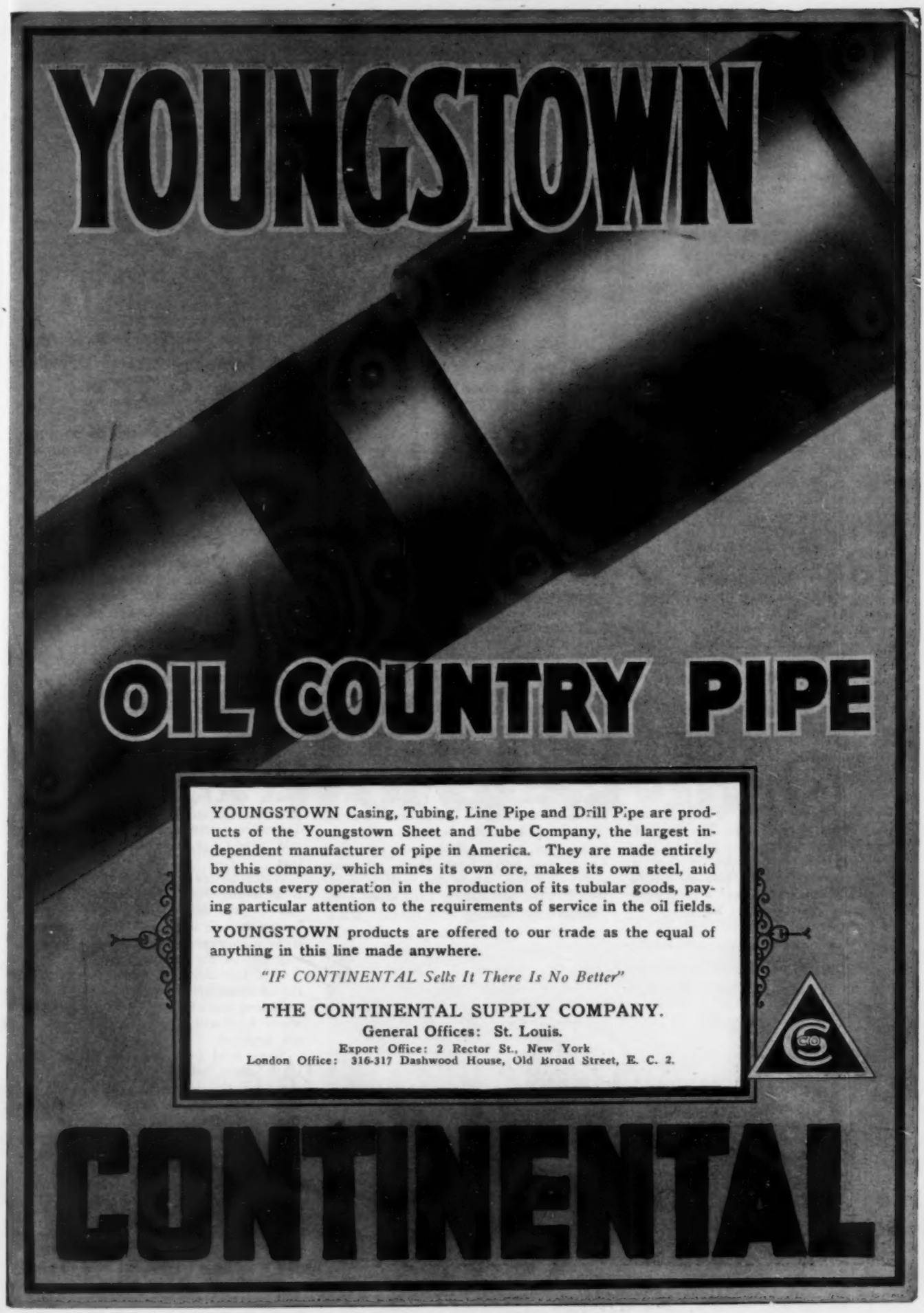
At lease five strings of pipe are used in drilling the average well in the Carson-Hutchinson County field.

The usual practice in using cable tools is to set a 15½-inch surface pipe at depths ranging from 200 feet to 500 feet, depending upon local conditions. This is followed with a string of 12½-inch down to about 1000 feet. The actual depth at which this string is placed will range from 500 to 1200 feet. This is a body of quick sand and offers many difficulties sometimes.

Drilling is continued on down to the top of the big lime at about 2100 feet, where either an 8¼-inch or a 10-inch is set. The hole is usually completed with



Settling and flow tanks on The Texas Company's lease in the Panhandle field. The treating outfit shown in another picture is connected to this settling tank.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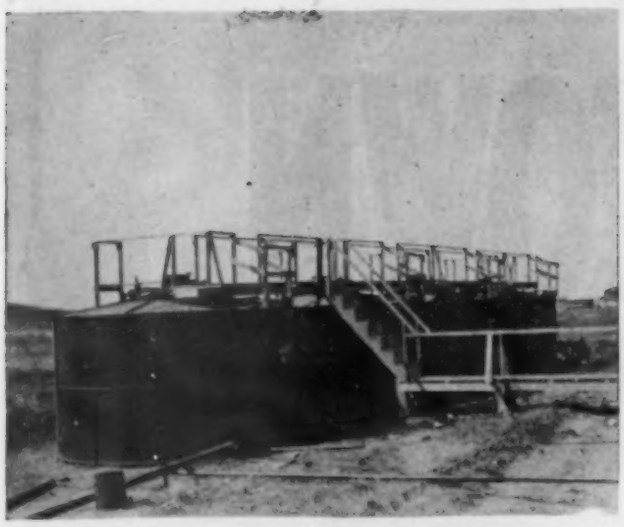
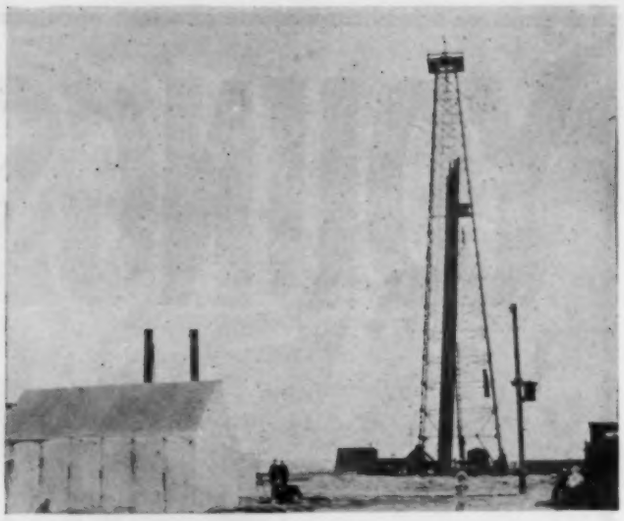




At the left is a group of lease tanks on the Dixon Creek equipped with steam coils. At the right is one of the few rotary outfits in the Panhandle.

a string of 6⅝-inch pipe which is placed on top of the oil pay.

There is a "red cave" formation to be pentrated before the pay is reached, and if this gives trouble, as it frequently does, it is sometimes necessary to finish with a smaller pipe.

Any size smaller than the 6⅝-inch is not to be desired, however, unless absolutely necessary, because the wax found in the oil makes pumping difficult in such a small hole.

Sometimes the 12½-inch and 10-inch strings are pulled after the well is completed. The practice of doing this is becoming more general as a means of reducing pipe costs per well.

The cost of drilling a well in the Panhandle field averages about $40,000. This figure includes, it ought to be mentioned, the shot of nitro, the flow tanks and the separator.

Drilling Time

The time required for drilling a well is from about 50 to 60 days. The "record" is considerably under this, and the time for a few wells is considerably over it. A little time is usually lost in getting through the quick sand, and a little more fighting the gas above the big lime.

One of the factors which have retarded the more general use of the rotary in the Carson-Hutchinson County field has been the price per foot demanded by rotary drilling contractors to drill to the top of the lime.

It can be expected that after more is known of the characteristics of the field and a better rotary technique has been developed, and also, when the rotary contractors reduce their prices a little, the rotary will become quite as popular there as it has been elsewhere.

As it was mentioned above, the rotary is already fairly popular in Gray County, where conditions seem to be rather more like those of other Mid-Continent fields, and the price per foot is lower.

Shooting

As the Panhandle field gets more thoroughly developed the percentage of natural flowing wells is decreasing. As an aid in getting a natural flowing well if possible, shooting is being resorted to. Sometimes the shots are large and sometimes they are of about moderate size. Large, and extra large shots, are generally the rule where the well is completed in the particularly hard sandy-lime, dolomite, formation.

The practice of shooting is in some cases effective and in others without any apparent results.

The indifferent effect of what might in other fields be termed large shots has led to the use of extra large shots, ranging from 300 quarts to as high as 800 quarts.

There may be no direct connection, but the early showing of water in some of the big producers which were brought in with these extra large charges of nitro is serving to discourage their use as a general practice.

More than 300 quarts might very well be considered a heavy shot for the average Panhandle well. The rule of some operators is to use about three quarts to the foot.

Water No Trouble

If a list were to be made of all of the problems which the operators in the Panhandle field have to contend with, and they were arranged in the order of their decreasing importance, water, it might be said, would fall somewhere near the bottom.

Water is scarcely a problem since it is generally found at sea level. With this pretty definite information to be known before hand for any given well, it is a comparatively simple matter to stay out of the danger zone.

It is not definitely known yet, due to the newness of the field and the lack of sufficient special data, whether or not the water level will rise as the oil reservoirs are depleted.

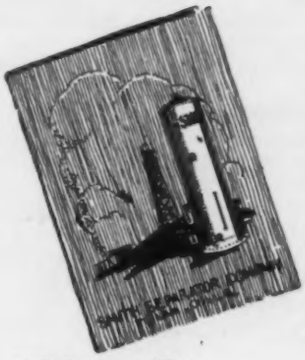
Some hold to the theory that it will, while others believe that it will not, saying that the tendency will be for the wells to go into gas rather than water as they get older.

It is interesting to note in this connection that there is apparently very little, if any, hydrostatic pressure on the oil.

Several of the larger companies operating in the field are now engaged in making special investigations into the conditions under which water encroachment may take place. Samples of brines are being taken as an aid in a thorough scientific study of the situation.

The presence of water in the producing

Outfit used by The Texas Company for treating with "Vex." The cut oil is pumped into the barrel shown and is treated and heated. W. E. Roberts, royalty gauger for the Burnett Estate watching operations.



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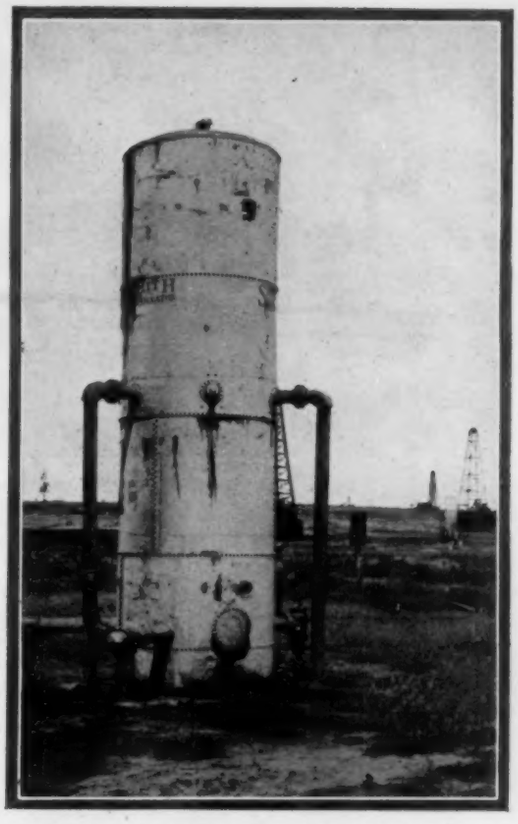

Above is reproduction of field picture showing two No. 10 Smith Oil and Gas Separators. Each separator has a rated capacity of 25,000 bbls. oil and 100 million cu. ft. gas.

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Borger after the fire. One of the Panhandle's busiest towns

portion of the oil sand may, or may not, hurt the output of the wells, in any event, it will more or less increase lifting costs and unnecessarily add to the expense of operation in that way.

The wells showing water in the Panhandle field are apparently the result of bad drilling, poor handling or excessive shooting.

Treating Cut Oil

The matter of cut oil in the Panhandle crude is quite a problem. By special handling the percentage of cut oil in some of the wells has been reduced to two per cent or lower. Where it hasn't, treating presents a special problem.

Two methods of treating emulsions are being generally used. One employs steam and the other an especially prepared commercial chemical compound made for that purpose. The common chemical compounds are "Vez" and "Tret-O-Lite."

In some cases the steam treaters render the cut oil suitable for pipe line acceptance, but generally the chemical is required.

It is interesting to note in this connection that about one per cent more water is actually found to be associated with the Panhandle crude than a good centrifuge test shows.

Much yet remains to be done in treating Panhandle oils for the water they may happen to contain. The problem is apparently a special one requiring a special solution.

Natural flowing wells, such as are sometimes found in other Mid-Continent fields, are probably not so frequent in the Texas Panhandle. Not a few of the wells must be put directly on the pump after they are drilled in. The field's rock pressure is remarkably low, averaging less than 450 pounds.

Flowing With Gas

The main gas producing horizon in the field is found, however, just a few feet above the oil pay, or at around 2200 to 2700 feet, and the gas from this pay may be used in some cases to flow the wells by a rather simple process of manipulation.

In fact, this practice has been in use for some time and accounts for the most of the big natural producers in Carson and Hutchinson counties.

The method, in brief, consists in allowing the gas from the gas pay to escape down to the bottom of the hole where it expends its pressure and forces the oil up through the 6⅝-inch casing.

In some instances this method produces good results, while in others it is not only ineffective but actually cuts down the amount of production.

When the latter result occurs it is apparently because a back pressure is created in some way on the oil sand. The rock pressure is so low that the slightest back pressure tends to slow down the movement of the oil. In cases where the back pressure exceeds the rock pressure, it is evident of course, that movement will be stopped completely.

In trying to flow a well with artificial means it is necessary that the oil pay be kept as free from pressure as possible.

The method adopted by one company to "jet" the oil out, has been found very sucessful in flowing several Panhandle wells with gas.

A liner is set on the bottom which is long enough to extend up above the gas. The lower end of this liner, that is the end which projects into the oil, is perforated and the upper end is left blank. A packer is placed outside the liner between the oil and gas so that the gas is shut off from direct contact with the oil sand.

With the natural oil level standing above the perforated portion of the liner it is easy to see how the gas works to expel the oil.

Poison Gas

The presence of hydrogen sulphide (H_2S) gas in the gas from Panhandle field wells offers an operating difficulty because of its toxocity. The concentration of the hydrogen sulphide constituent varies from a mere trace to as high as nine per cent. The average concentration will probably run around one per cent or slightly less.

Hydrogen sulphide is very toxic and may prove fatal if the air breathed contains much more than a mere trace. No fatalities from hydrogen sulphide poisoning have been reported in the Panhandle field, but it frequently causes such minor troubles as irritated eyes and inflamed throats and lungs.

In working around a well where there is free gas containing hydrogen sulphide it is essential that a proper type of gas mask be worn. This is particularly necessary when the men are working in cellars since the gas is heavier than air and tends to settle in the lower places.

The mask generally used is of the positive air feed type which covers the eyes as well as the mouth.

This hydrogen sulphide bearing gas is usually confined to the gas sand and likely to be shut off when the casing is set on top of the lime.

Anhydrides

Another condition rather peculiar to the Panhandle field is the apparent presence of anhydrides in some places. Since they have the property of swelling up when wetted they frequently cause trouble when drilling with a "wet hole."

When a rotary passes through a formation carrying anhydride trouble starts. The mud wets anhydride and if it doesn't grip the drill pipe it, at least, makes a pretty tight hole.

Whether or not an anhydride is actually found in the oil producing horizon has not been definitely established.

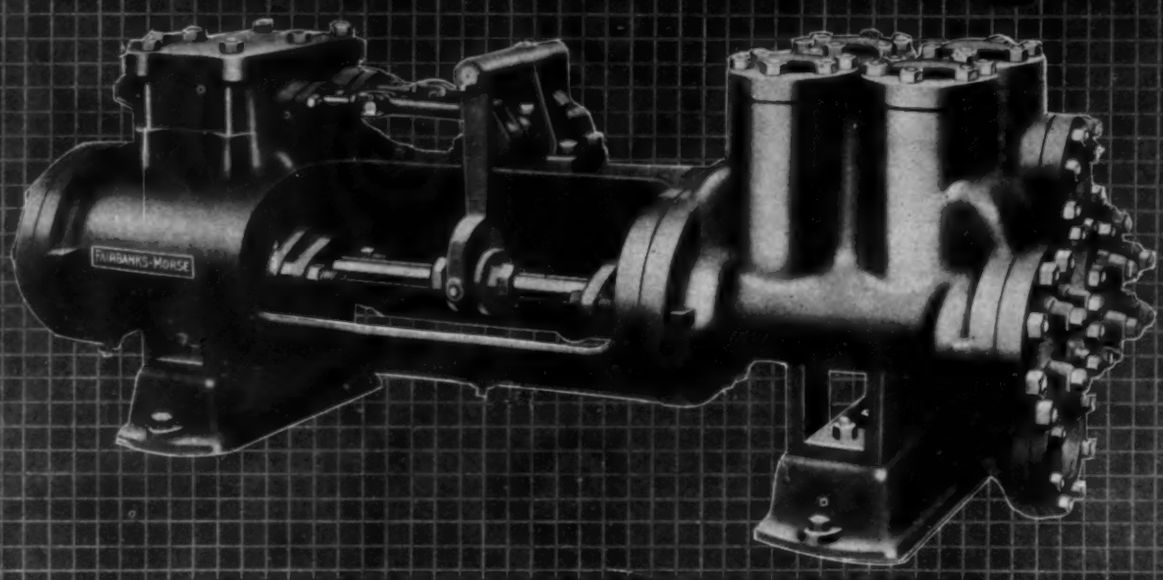
If it ever does happen to occur there, any water used in drilling in or cleaning out will certainly cause it to plaster up the walls of the hole.

At lease one company operating in the Panhandle field uses oil for drilling in

Field Camp of the Wilcox Oil and Gas Company in Gray County, Texas

FAIRBANKS-MORSE

Oil-Field Line Pumps



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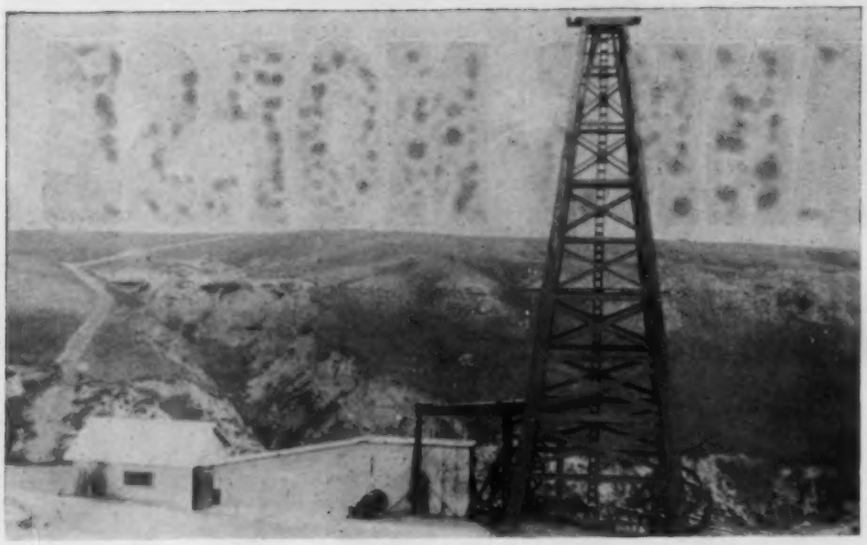

The Combs et al's No. 1 well of the Wilcox Oil and Gas Company in Gray County, Texas

and cleaning out instead of water as a precaution against such a thing happening, it is reported.

Under any circumstance, it is probably true that water should be used sparingly after the pay sand has been drilled into. If the column of fluid behind the water in the bottom of the hole is such that it will exert a pressure greater than the rock pressure, the water, of course, will be forced back into sand to cause trouble.

Oil Congeals

The chief difficulties which the operators have in the Panhandle field are caused, probably, by the characteristics of the crude being produced. It has a high pour test and congeals at temperatures at which other crudes are still more or less liquid. This is due to the presence of large amounts of wax and other high pour substances, apparently.

The crude runs up to 20 per cent wax and about 43 per cent lub stocks, and has around a 90 cold test. The wax and other substances present in the crude not only cause it to congeal at around 55 degrees F., but they collect on the walls of the hole to seal off seepage, and accumulate in the casing and tubing to restrict the outward movement of the oil.

The comparatively light flow and low pressure of the gas accompanying the oil is not sufficient, generally, to keep the paraffin from sealing off the walls of the producing sand and clogging up pipes. For this reason some artificial means is usually needed to insure free flow.

The accumulation of wax has been found to be the real cause of rapid declines of production in many wells rather than any depletion of the pay formation.

Clean With Swab

The swab is frequently used as a means of maintaining a maximum flow by keeping the casing free of paraffin deposits, and the pores of the oil pay open. A good run with a swab several times during a 24-hour period every two or three days has been found most effective. It is surprising, the amount of paraffin wax and depositions that the swab will bring out when used in this way.

An interesting experiment has been performed in the Panhandle field with a chemical compound known as "Sure-Kut", which was intended to remove such deposits. The Prairie Oil & Gas Company's Weatherly 1, section 17, Block Y, was treated with the preparation and increased its production more than 100 barrels, or to about 150 barrels a day.

In applying the chemical to the well in this particular case, the hole was cleaned out and swabbed dry. Then two four-inch bailers of the compound was dumped in and allowed to stand two days. Following this the swab was run again, and the well cleaned out.

As it was mentioned above, the treatment increased the production more than 100 barrels. The quantity of chemical used in this instance was about 100 pounds. At the cost of $1 per pound, each initial barrel of increased production cost a little less than $1.00.

In other fields, the use of some such common solvent as kerosene has been made with a certain degree of success, although no instance of its employment in the Panhandle field has been reported.

In a pumping well, the kerosene is poured in between the casing and the tubing and allowed to stand until the next period of pumping or until the action has had time to take place. The well is then put back on the pump and operation resumed. The subsequent passage of the kerosene up through the barrel of the pump and the tubing tends to clean them of their wax deposits also.

New Domain Oil and Gas Co.'s Kingsland 1, Sec. 4, Blk. Y, after a shot of 170 quarts.

The paraffin which normally collects in the pumping wells in the Panhandle field frequently causes them to be off production a third, or more, of the time.

As it was mentioned above, the flow of the gas with the oil is light and of low pressure. Maybe this is somewhat to the advantage of Panhandle operators.

It is well known that gas expanding as it is released from under pressure is a cooling agent and may reduce temperatures more or less considerably, depending upon initial pressure, etc.

If there was more gas associated with the oil in the Panhandle field to expand upon release and act as a refrigerating agent, paraffin depositions might be greater.

The nasty problem is not only to get the oil out of the ground and to the surface, but to handle it from that point on. The wax accumulates in flow lines to restrict them, and cause all kinds of trouble.

A method in common use to present excessive depositions in lines from wells to lease tanks is to have them hooked up so that steam may be blown through them at frequent intervals. It is done without a great deal of manipulation. This is accomplished by having the flow lines fixed so that they may cut into a circuit carrying live steam from a boiler.

This method works very well during the summer months, but during the winter the lines must be heated continuously to keep the oil fluid at all.

This is accomplished by some such method as placing a steam line along side the oil line and then boxing the two in with boards to facilitate heat transfer and prevent losses from excessive radiation.

Gas separators, flow tanks and other lease tanks must be equipped with steam coils to keep the oil in the fluid during the winter months.

In fixing up a tank with steam coils to heat the oil, the coils are placed in the bottom and connected to a boiler, usually set up for this purpose.

The common practice is to put a few inches of water over the steam coils since it is not desirable that the oil come into direct contact with their hot surfaces.

Although the field is as yet so young that it has not gone through a Panhandle winter as a thorough-going producing area, such as it now is, operators know what to expect when the warm days pass and are already preparing for what is in store for them. To be left out in the cold has an added meaning to Panhandle operators, whether all of them recognize it or not.

The real problem offered by the congealing properties of Panhandle crude during the winter months is not to be found in handling it through short lease lines and small lease tanks, however, but rather in the long gathering and trunk lines which carry it out of the field.

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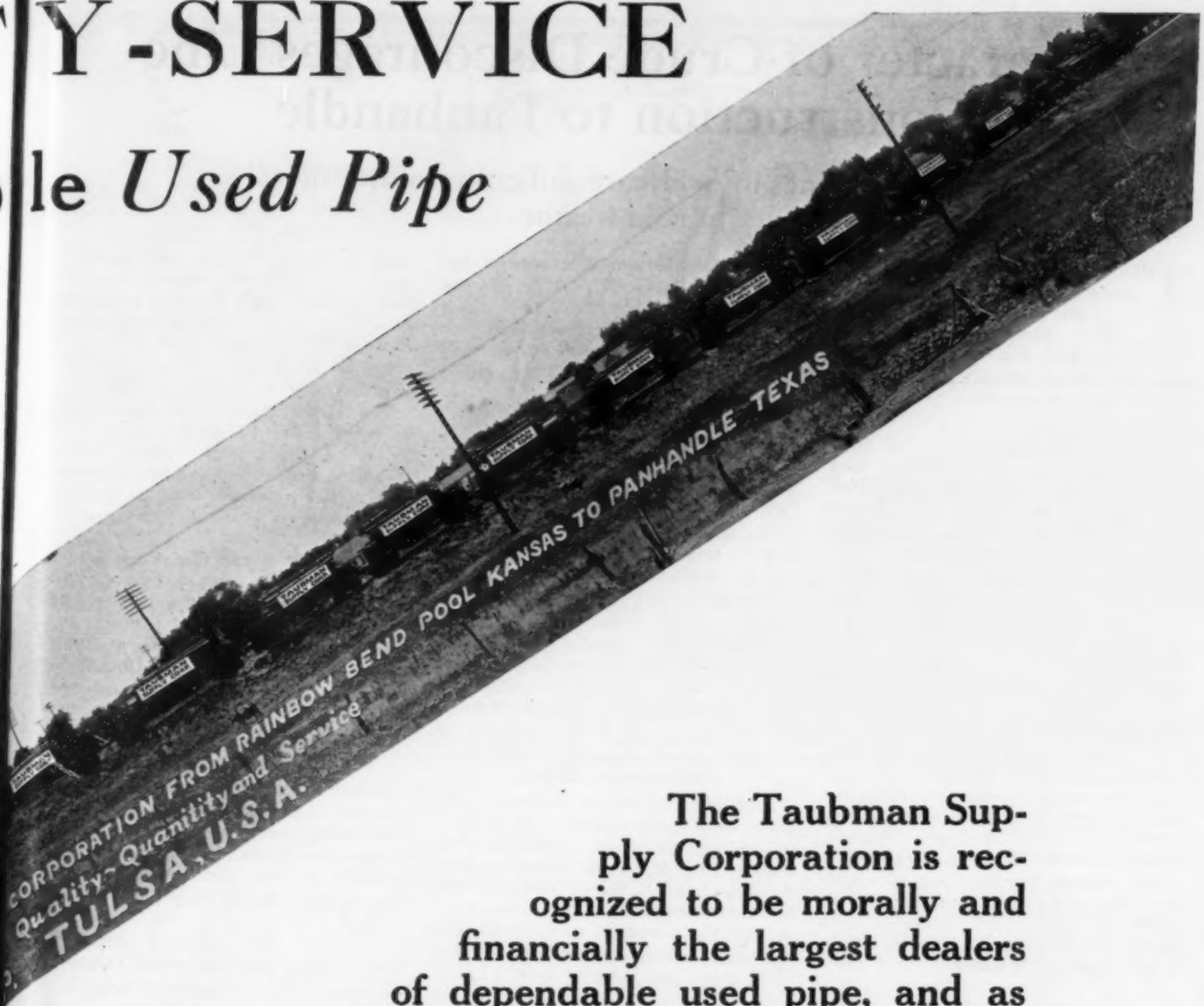

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Character of Crude Discourages Line Construction to Panhandle

Gathering lines in field have difficulty in moving oil in cold weather

THE Texas Panhandle field has produced more than 5,000,000 barrels of oil already, and is now running above 70,000 barrels daily. Despite these facts, it is still without an actual pipe line outlet. More than that, there is no apparent immediate prospect for a trunk line from the field.

As things now are, all the oil leaving the field must be handled by tank cars from either Panhandle, Kings Mill, Clyde or Pampa, where it is piped from the field through four-inch, six-inch and eight-inch lines to loading racks.

These tank car shipments account for only about a third of the field's production, and, besides some 3000 barrels which are taken by the Amarillo Refining Company for their plant at Amarillo, the balance is put into steel storage near the loading racks or in the field proper.

Practically all the major pipe line companies operating in the Mid-Continent have made tentative surveys for lines to lead from the district to connect with Mid-Continent carriers, either to the north or to the south.

One project provided for an eight-inch line to go in a southeasterly direction to Addington, Oklahoma, and thence to Ringling, Oklahoma, a distance of about 208 miles.

Projected Line

The survey was made by the Prairie Pipe Line Company and the line would have provided either an outlet to the north or to the south. From the terminal station at Ringling, Oklahoma, a connection may have been made through the Oklohoma Pipe Line Company's line to the Standard of Louisiana at DeQueen, Ark., for movement to Baton Rouge.

Another tentative survey called for a trunk line either to Houston or Port Arthur.

When the Magnolia Pipe Line Company laid its 6-inch line from the field to Kings Mill in Gray County, it appeared that a connection would soon be made with the main trunk system in Central North Texas. Nothing has materialized.

The Magnolia Pipe Line Company has space for 33 55,000 barrel tanks at Kings Mill, and from the announcement that in addition to the 13 already erected, six are building, three are on the ground and six are en route, it seems that Magnolia is planning to store Panhandle oil for the present at least.

The recent purchase by the Prairie of the west 320 acres in section 183, block 3, I. & G. N. survey, Carson County, near Kings Mill, to build a large tank farm, indicates that a pipe line outlet for the field will not be made for some time and they will accumulate stocks in the field.

The Gulf Pipe Line Company is reported to have made a survey for a line from its present field terminus at Claude to its Ranger station in the Central West Texas district.

The warm summer days are passing and this proposed project, as well as the others, has apparently gotten no further than a tentative survey.

All of this seeming antipathy on the part of pipe line operators is in spite of the fact that the present facilities are operating near capacity, and there are some 600 locations and active tests in the different stages of operation in the field.

Difficulties of Moving

Probably the greatest deterrent to the entry of a trunk line into the field is the extreme difficulty of moving Panhandle crude during the winter months. At 50 degrees F. the oil congeals into an immovable mass. The temperature out in that country gets pretty low during the winter and will stay below 50 degrees for long periods.

One of two things must be done to the oil before it can be moved through pipe lines in the winter time, it must either be kept warm or treated with some sort of a chemical or process that will keep it liquid at low temperatures.

The cost and mechanical difficulty of heating the oil the entire distance of a long line, or at frequent intervals, is apparent. As one pipe line operator put it to the present writer, "The oil is scarcely worth it, you know."

Not only must the line be heated, but the large storage tanks must be kept warm.

It is a problem, of course, to handle the oil in comparatively short lease lines and small lease tanks, but it is not any proportion to the one encountered by gathering and trunk line operators with long lines and 55,000-barrel tanks.

Besides the cost and difficulty, heating has another serious draw-back, and that is the tendency that it will have to knock off lighter fractions of the crude. Panhandle crude seems to have the property of losing its more volatile constituents very easily.

Some of the oil moving to the loading racks will be heated, however, during the winter months, it is reported. The method will be to place the stations at about half the usual interval along the line, or about every 15 miles or so, and pass the oil over steam coils which will bring it up to around 80 degrees F. What the heating doesn't accomplish, it is supposed the extra stations will.

The lines connecting the stations will be buried below the frost line, or about 36 inches deep. All exposed points along the line, such as where it crosses a creek bed or ravine must be protected and will be so handled in most instances.

It has been found that when heated Panhandle crude comes into contact with the cold surface of a line at such a place where it crosses a creek, the sudden drop in temperature not only causes the oil to get stiff and block the line, but the wax is liable to be precipitated out, which will make matters worse.

Scrapers Don't Work

Scrapers to put through the lines to remove wax depositions have been tried unsuccessfully. In one case three scrapers were stuck in a line at one time and the line was out of operation for several days before they could be extracted.

If a pipe line becomes encrusted with paraffin wax and other tenacious substances, the quickest and surest way to clean it is to burn the matter out. This can be accomplished only by cutting or unscrewing pipe, taking it out of the trench and building a fire under it.

Some lines are hooked up so that in case it becomes clogged some place, operations may be reversed and the oil pulled back out. Such a practice accomplishes something, but not the thing that is wanted, and that is the movement of the oil forward.

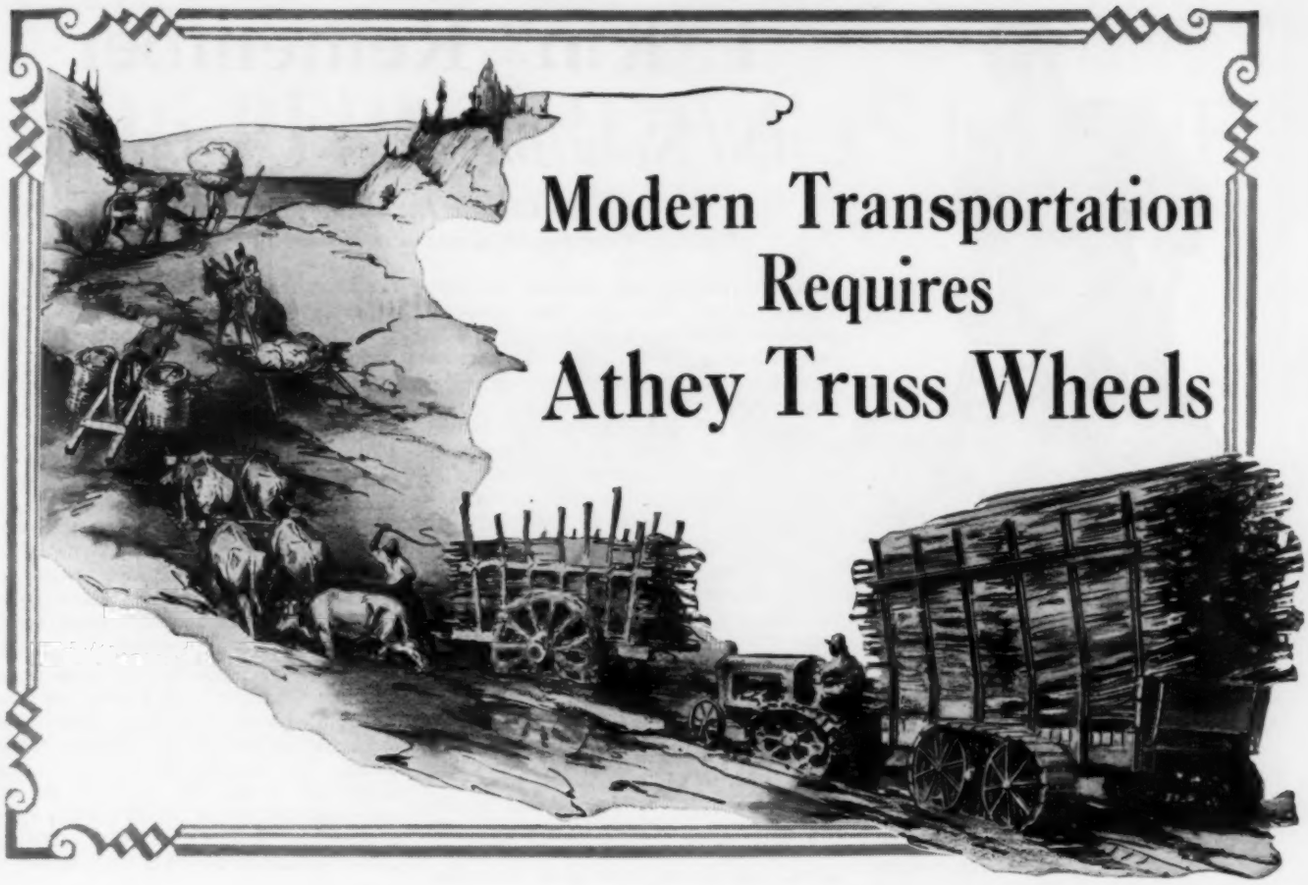
During cold spells last winter the Pantex Pipe Line Company's line from the field to Amarillo was shut down almost completely several times, although the pipe is buried below the frost line and the trench had stood long enough for the fill to be packed.

Except for digging down at intervals and trying to heat the line with burning oil, little could be done to relieve the situation except wait for warmer weather. Trying to force the congealed oil through with increased pressure does not work.

Chemical Treatment

The other solution of the problem is chemical treatment of the crude. Chem-

(Continued on page 136.)

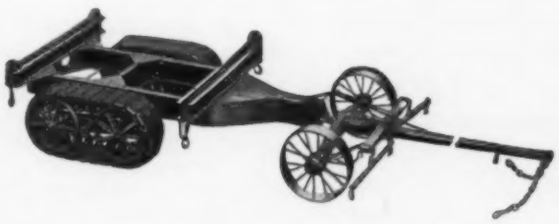


Modern Transportation Requires Athey Truss Wheels

Primeval man plodded through the mud with a pack on his back, or led a beast of burden. He expended much labor but accomplished little.

The American Indian lashed two long poles to his pony's back. He let the rear ends drag on the ground, and carried the load in the middle. This gave more capacity but developed much friction.

Then some ancient genius put round wheels under his freight and secured more efficient transportation. Although excellent on hard ground, round wheels bog down and mire in mud.



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ATHEY TRUSS WHEEL WAGON

IT BRIDGES THE SOFT SPOTS

Say you saw it in The OIL WEEKLY

I "Kin" Remember

Oil Scouting as It Used to Be

By Claude L. Witherspoon

President, Witherspoon Oil Company, in an interview with A. W. Roe

YES, sir, "I kin remember" when there was no such animule as an oil scout in Texas. At the banquet of the National Oil Scouts here in San Antonio this spring, mentally I was carried back over the trail that led from the first scouting days down to 1926 when the scouts of the present gathered about the festive board and when the scouts are now so numerous that they boast a national organization of a membership running up into the hundreds, the bulk of which are Texas scouts. It has been said that no product, trade or profession is thoroughly standardized until it has a nation-wide organization to represent it. Looking over the group of representative scouts at the banquet, one could not help thinking that scouting must have become standardized since the early days of scouting in Texas around Corsicana.

Scouting in Texas came about as a logical development of the oil business in the Lone Star State. The first oil scout in Texas? Who was he? Well, I should say that the first man to whom the title of scout could rightly be given is William D. Bates. In 1894 or 95, Johnson & Aiken drilled a well in Corsicana for artesian water; oil was struck in this well in 1895. Then after this discovery, Damon & Beaton, a real estate firm, with the assistance of Jack Davidson, an old time Pennsylvania oil man, leased up a large block of farm lands for the purpose of developing them for oil. They then made a deal with Guffey & Galey, big and industrious wildcatters of Pittsburgh, Pennsylvania, to drill three wells on this block of acreage for an undivided one-half interest in the property. Guffey & Galey drilled these three wells as agreed. Two were producers of oil, and one was a dry hole. They then made a give and take proposition to the Corsicana Oil and Development Company whereby they would take over the leases of Damon & Beaton, to either give the Corsicana Oil & Development Company $50,000.00 in cash for their one-half interest in the property, or to take $50,000.00 for their interest. The Corsicana Oil & Development Company bought them out, paying them $50,000.00 in cash for their one-half interest in the property. This company employed Bates as scout in 1897. The year following, Fred W. Freeman became scout for the Corsicana Petroleum Company, and I followed suit with Staley & Barsdall. We were the "Three Musketeers" of the early days at Corsicana. Corsicana at that time was the oil capital of the South. In a comparative sense, the amount of oil produced in the Corsicana field, which had the only oil wells in the South then, was a mere drop in the ocean when considered along side the vast amount that is produced today.

What a Scout Does

It may seem like rambling, but to clear up various misunderstandings among people who do not work on oil "location," as the motion picture people might say, I wish to add that an oil scout is a confidential agent of his company in purchasing new properties. He is what might be called a field agent in one sense of the word, only he is often given executive powers to buy and close deals involving the expenditure of almost fabulous sums of money. From this definition it will be seen that the position of scout is no mean one, and that it carries with it a world of trust and responsibility. Large sums, up to more than a million, have been paid out upon the simple recommendation of the scout for holdings in new localities. Usually, of course, executives of the oil company come to look over the holdings if there is time, but even then the recommendation of the scout is generally the information that is relied upon in making a decision. Although most scouts come up from drillers, since by necessity they must be men who have first-hand knowledge of conditions in certain fields, they are as a group men of high order of ability. As a class they are well paid, but deserve to be. Although I do not know for a certainty the exact yearly pay check that any scout is drawing down now, $25,000 would be no high salary, I should say, for scouts of some of the bigger companies here in Texas today.

The scout has no swivel chair job now, and much less did he have a soft padded sinecure back in the late nineties when Bates, Freeman and I were the "Three Musketeers" of high adventure in Corsicana.

Spindletop

Those were the days for real thrills in oil development, I'll say they were. Well do I recall the excitement that the bringing in of Spindletop caused throughout not only oil circles but the entire world as well. Talk about the hectic days of the "Forty-niners," or the gold rush to the Klondike, still fresh in the memories of some oil men. Neither of these El Dorado migrations "had anything on" the rush to Beaumont when Spindletop became suddenly in 1901 the wonder of the oil world.

Spindletop came in on January 10, 1901, a red letter day in oil history and one that the musketeers will never forget. I was in Corsicana on the memorable day when Al W. Hamil wired me the news. The well came in at four o'clock in the afternoon; I had the message at five, and immediately afterwards we three scouts at Corsicana were aboard a train, speeding southward to Beaumont.

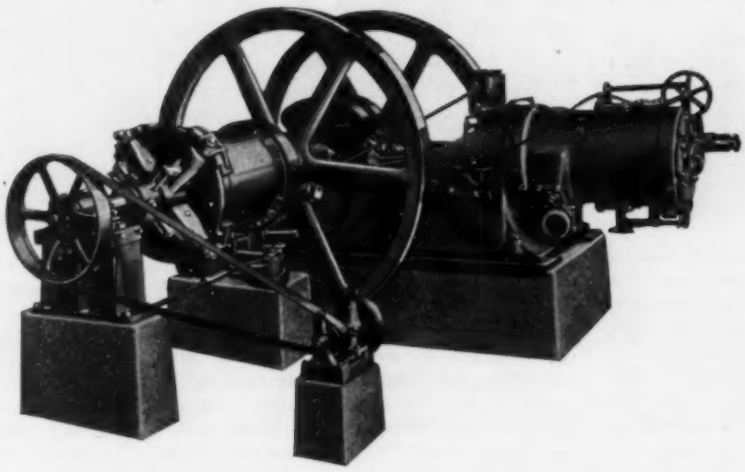
The telegram was too fabulous to believe, we thought. Of course, we were excited, who wouldn't have been? But we were incredulous as the train rushed along. Who wouldn't have been, for who could believe that the well was shooting out oil at the rate of 50,000 barrels a day, a statement that the telegram made not as an intimation but as a mere matter of fact statement.

Yet the message proved to be conservative, for the Lucas gusher, as Spindletop was known by those on the scene, really shot out 100,000 barrels a day. The oil stream stood at an estimated height of 110 feet for ten days. Yes, it was some baby, I'll say so. It is worth recording that the well was brought in by A. F. Lucas, geologist, for Guffey & Galey, preeminent wildcatters.

Heads of all the oil companies in Texas were on the scene as soon as trains could speed down to Beaumont, but it was about 60 days before the real boom got under way. The boom brought in bankers, farmers, cattlemen, bakers, butchers, and candlestick makers, who didn't know a continental about the oil business, but each of whom figured that he could get rich playing the game anyway. Beaumont became the mecca of men whose minds are easily turned by get-rich-quick dreams. California had them in '49, Alaska in the late nineties, and Florida during the last two winters. Each of these men, with golden dreams of riches to be wrested from the bosom of mother earth some morning before breakfast, thought it would be an easy matter to locate a well, drill a hole through the upper crust, and have a well flowing as glibly as Spindletop in an hour. Each probably had visions of a well belching out 100,000 barrels a day that would be sold for $1.00 a barrel. Needless to add, a few of these gentlemen with their roseate dreams, were disappointed. There weren't quite enough wells to go around. Too, oil took a sudden tumble, and during May and June of 1901 could be con-

(Continued on page 160.)

THE REID 35 H. P. GAS ENGINE



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Character of Crude Discourages Line Construction to Panhandle

(Continued from page 132.)

ical compounds have been offered to separate bituminous sediment and break down emulsions, but the problem of keeping the oil fluid at low temperatures by chemical treatment is apparently an entirely different matter.

Several chemical compounds with the properties of reducing the pour test of Panhandle crude during cold weather have been experimented with from time to time.

The outcome of a series of tests made by Prairie is being awaited with considerable interest. The chemical compound used in this instance was furnished by Albert H. Ackerman of Chicago. The claim was that it would prevent Panhandle crude from congealing at temperatures above 10 degrees below zero F.

In the test under the observation of several Prairie officials, and others, a sample of crude bearing an unusually large proportion of wax and other high pour substances, and which begins congealing below 68 degrees F. and is solid at 56 degrees F., was kept liquid and poured freely at 32 degrees F. with a very small amount of the compound.

Under Panhandle weather conditions about half an ounce of the chemical is required to the barrel of oil, it is reported, and the total cost of the treatment is not over 5 cents per barrel.

Apparently, some such method as this is going to be the final solution to the problem. Furthermore, it can be supposed that no company will attempt to build a line until one is successfully worked out.

Movement of Oil

The companies taking oil in the field and running it into storage or shipping it out via tank cars, or both, are the Gulf Pipe Line Company, the Humble Pipe Line Company, the Magnolia Pipe Line Company, the Marland Pipe Line Company (Kay County P. L. Co.), the Pantex Pipe Line Company, the Plains Pipe Line Company, the Prairie Pipe Line Company, the Phillips Petroleum Company and the Sinclair Crude Oil Purchasing Company.

The Phillips Petroleum Company is operating the 4-inch pipe line of the Bartex Pipe Line Company from Hutchinson County to Panhandle. In addition to this, they have a 30-mile 3-inch line from the field to the loading rack at Panhandle for handling the gasoline from their natural gasoline plants in the field.

The 8-inch Marland line starts in Hutchinson County and terminates at Panhandle, where a 50-car loading rack is operated. The main pumping station is located in section 5, and a booster station is situated about 14 miles north of Panhandle, or approximately half way.

The tanks used by the Marland Company are each equipped with 1050 feet of 2-inch steam coils for keeping the oil fluid during cold weather. Outlets are protected between the tanks and where they enter the ground with steam connections.

The line is buried to a depth of at least 32 inches. Since every effort was made to prevent restriction of the flow, it was necessary to go 20 feet deep in order to prevent bends in some places because of the roughness of the country. A machine was used for making the trench.

In districts where the line had to cross canyons, supports were set up and the pipe covered to insulate it against the weather.

Line Welded

The length of the line is approximately 27 miles. It is welded the entire distance and represents 20,790 welds. No expansion joints were used to take care of expansion or contraction, but the pipe was made "slack" in the ditch which permits it to work without inviting strains.

Marland is at present shipping about 10,000 barrels of Panhandle crude daily from its loading rack. Some is sent to the Ponca City refinery and the balance goes to Texas City for export.

The Santa Fe has a freight rate of 20 cents per 100 pounds on crude moving to the Gulf Coast for export shipments. Effective August 14, the rate will be 13 cents per 100 pounds for crude moving to Kansas and Oklahoma points. It can be expected that larger quantities of Panhandle crude will then be shipped by Marland to its Ponca City refinery.

Besides Marland, the Gulf Pipe Line Company has an 8-inch line from the field to a loading rack on the Santa Fe at Panhandle.

The Gulf Pipe Line Company starts picking up oil across the Canadian River, where the Gulf Production Company has production on the Dial ranch. Two 80's are maintained on the Dial property and 160 acres are held in section 8, block 2, T. & P. survey, Carson County, for a tank farm.

Although the frost line is usually only about 24 inches deep, the Gulf line has been buried 42 inches as an extra precaution.

The 6-inch line operating between the field and the city of Panhandle is owned by the Plains Pipe Line Company. The main station is located in the northwest quarter of section 113, block 5, Carson County, on Dixon creek, and loading racks maintained on the Santa Fe. Pickups are started on the Dial ranch and connections maintained in Hutchinson County, eight 55's are owned by the company.

Connecting with loading racks on the Santa Fe at Kings Mill is a 6-inch line operated by the Magnolia Pipe Line Company. Judging from the direction taken by this line, it is likely that Magnolia had in mind an extension some time which would tie in Panhandle production with its main trunk system.

The Magnolia is probably the only crude purchaser in the Panhandle field that has no immediate plans to ship out large amounts of its runs. No shipment has been made to date, it is reported.

They have thirteen 55's already built and full of oil, six building, three on the ground and six en route, making a total of 28. A site is owned at Kings Mill capable of accommodating 33 55's.

At present 12,500 barrels of oil are handled daily at 700 pounds pressure through the Magnolia line. This varies from time to time, due to weather conditions.

Disaster of Shower

Several months ago the line was running smoothly at 700 pounds pressure and delivering 125 barrels of oil an hour when a cooling shower came over. Within a few hours the pressure had increased to 1200 pounds, and the delivery dropped to 30 barrels an hour. All of this was because a little cold rain water seeped down into the pipe trench and cooled the pipe slightly.

The site of the Prairie tank farm is situated near the Magnolia's. The plans held by Prairie call for an eight-inch line from the heart of the field to this point.

The Humble Pipe Line Company now has under construction 10 miles of eight-inch line from a pumping station in section 11, block "Y", Hutchinson County, to a tank farm and loading rack in section 75, block 5, I. & G. N. survey. The rack will be on the new Santa Fe spur now being built into the field from the main line at Panhandle. The Humble will erect several 55's in section 75, and an 80 in section 82, block 3, I. & G. N. survey, Gray County.

The rest of the crude from the Panhandle field proper is being run by the Pantex Pipe Line Company to Amarillo through 45 miles of six-inch line.

The terminus of the Pantex line is at a loading rack at Amarillo. Part of the runs are shipped in tank cars and part go to the Amarillo Refining Company, who take about 3000 barrels daily.

May Build Plants

This is the only refinery near the field operating exclusively on Panhandle crude. Plans are underway, it is reported, for erecting other refineries in the district to operate on Panhandle production.

That is going to be one way that the nasty problem of transportation will be solved, or more precisely, avoided.

Construction work has already started on a skimming plant which will be located near the town of Borger, in the field, by the Amarillo Producing and Refining Company. This plant will utilize part of the equipment once installed in the small plant which was at one time operated at Panhandle.

The Sinclair Crude Oil Purchasing Company is confining its efforts to the Wilcox field in Gray County. It has six miles of four-inch line from the field to a tank car loading rack at Pampa. This line is being paralleled with an eight-inch line and the capacity of the loading rack tripled to 30 cars to take care of the greatly augmented production from the Wilcox field.

The crude from the Wilcox field is very similar to that from other Mid-Con-

(Continued on page 180.)

The number and character of users in the Mid-Continent oil fields are a significant tribute to the superior excellence of the Elliott-Alco Core Drill and to the service which backs it up. The worth of a tool is shown by those who use it just as surely as the character of a company is evidenced by the tools it uses.

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American Lumber Co.
Argo Oil Co.
Arkansas Fuel Oil Co.
Associated Oil Co.
Atlantic Oil Prod. Co.
Barkley & Meadows
Beard, J. G.
Beckman & Freeman
Brown, F. H.
Chew, W. D.
Clarke & Melat Dr. Co.
Cole Pet. Co.
Comar Oil Co.
Cromwell Oil & Gas Co.
Crosbie, J. E.
Crown Central Petroleum Co.
Crusader Oil Prod. Co.
Duho Oil Co.
Empire Gas & Fuel Co.
Federal Pet. Co.
Fitzsimmons Drilling Co.
Fortuna Oil Co. (Magnolia)
Freeport Sulphur Co.
Gessel Drilling Co.
Grayburg Oil Co.
Gulf Production Co.
Gulf Refining Co. of La.
Gypsy Oil Co.
Hanbury, H.
Houston Gulf Gas Co.
Houston Oil Co.
Hughes, (J. K.) Dev. Co.
Humble Oil & Refining Co.
Humphreys Corp.
Hunt, H. L.
Iatt Lumber Company
Ina Oil Co.
Indian Terr. Illuminating Oil Co.
Johnson & Kemnitz
Jones, E. M.
Julian Pet. Corp.
Killam, O. W.
Kirby Petroleum Co.
Kittle, W. F.
Lomas, T. G., Jr.
Louisiana Oil Ref. Co.
Love, L. P.
Lummus, J. N.
Marland Oil Co.
Marr, Pat
Martin & Drake
McMillan-Smith-McDannald
Mid-Continent Pet. Corp.
Murdock, C. E.
Morefield, W. H.
Morter Drilling Co.
Natural Gas & Fuel Co.
Newblock Oil Co.
Ohio Oil Co., The
Palmer & Buckley
Palmer, J. F.
Pender, R. B.
Penn, R. R.
Phillips Petroleum Co.
Prairie Oil & Gas Co.
Pure Oil Co.
Putnam & O'Hern
Ramsey, W. R.
Rio Bravo Oil Co.
Roxana Pet. Corp.
Ruston Drilling Co.
Rycade Oil Corp.
Schubert & Scott
Selby Oil & Gas Co.
Shaffer, J. C.
Simpson-Fell Oil Co.
Sinclair Oil & Gas Co.
Skelly Oil Co.
Southern Crude Oil Purch. Co.
Standard Drilling Co.
Suladie Drilling Co.
Sun Oil Co.
Texas Company, The
Transcontinental Oil Co.
United North & South Oil Co.
Vacuum Oil Co.
Waggoner Refining Co.
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Wilcox (H. F.) Oil & Gas Co.
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New Railroad Will Greatly Facilitate Panhandle Development

Operations have been seriously hampered by expensive hauling over non-existent roads

By Roye Munsell
Staff Representative

Amarillo, Texas.—The new railroad now under construction between the town of Panhandle and the Panhandle field, and the bridge across the Canadian River, will mean much to the operators in the Panhandle.

Without these facilities, the transportation of casing drilling equipment and other operating materials is not least among the problems of the companies engaged in this area.

The town of Panhandle, on the Santa Fe, is at present the nearest railroad unloading point. It is located in the south central portion of Carson County, and is some 30 miles from the field proper. Every piece of material and equipment that has gone into the field was trucked the entire distance.

Added to this, the roads leading up to the field are anything but A-No. 1. In dry weather they are at least fair, and the trip can be made in several hours, providing no high centers are hit, or the like; but in wet weather—well, it takes a day or two, more or less, to complete the trip.

The country to be traversed is sometimes flat, sometimes rolling and sometimes plain and fancy mountainous. Near the upper portion of the field many steep grades must be taken to cross surface features that a plainsman would be apt to call canyons.

Considering the circumstances of the Panhandle field as pertains to transportation, its development to date, such as it has been, is remarkable.

As it was mentioned a while ago, every piece of material and equipment that has gone into the field has been trucked 30 miles or more, and over roads variously good, bad and well nigh impassable.

Adds to Costs

Probably the greatest single hauling job attempted was the movement of materials, supplies and equipment from Panhandle to the Carson-Hutchinson County line to be used by the Western Carbon Company in construction of their large carbon black plant in the field.

Transportation has not only been a large problem to the companies in the

Along the creeks near the river travelling is most difficult and it is not at all unusual to make many detours in order to reach some leases.

Panhandle field, but it has added much to their cost of operating there.

For a time, trucking prices were rather high. In the fullness of time, however, hauling contractors from all sections were attracted there, and it wasn't long then until a process, which had something of the semblance of price cutting, set in and prices came down.

Trucking prices for the transportation of materials from the town of Panhandle to the field now range from $1.50 to $6 per ton. This applies to points south of the river. To points north of the river, the price is of course much higher.

The range in the prices just given is to be accounted for very largely by the differences in the quality of service, so to speak. Many of the best hauling contractors hold out for the higher prices and get them because some of the companies know by experience that it is worth paying slightly more to be assured of dependable work. Good things have a way of having a premium attached to them, you know.

The expense of trucking to operators in the Panhandle field is tremendous and has run into several millions of dollars, one might very well suppose. Some idea of what the total figure is can be gotten from the fact that the cost of trucking per well will run around $2000.

Added to this, the Marland Company, Gulf, Phillips, Skelly and the other major operators in the field have built and are maintaining large field camps. The Phillips Petroleum Company and the Skelly Oil Company have constructed a number of natural gasoline plants, and much steel storage has been erected and pipe lines laid.

Everything used in these projects was transported to the field by trucks, or in one way or another, over dirt roads.

Line Into Field

When the Santa Fe has completed its spur from the town of Panhandle to the point in the center of the field, however, all of this trucking and hauling will be unnecessary, for the materials can be unloaded directly from the freight cars right in the field.

The Santa Fe started work on the line immediately after the permit was granted a short time ago, and construction has been rushed as fast as possible, apparently. It ought to be completed and in service in a short while.

From the town of Panhandle the spur will run due north for a distance of about 10 miles on the top of a ridge. At that point it will swing to the northeast and pass through the west edge of the Granite wash producing area in Carson County, and thence across the Marland Oil Company's Burnett lease in section 116, block 5, H. & T. C. survey, and on just east of the Prairie camp, swinging up through section 13 to a point near the Phillips main camp. The present plans

A hard creek crossing in the Panhandle section. The two trucks ahead are being used to pull the loaded truck of pipe across.

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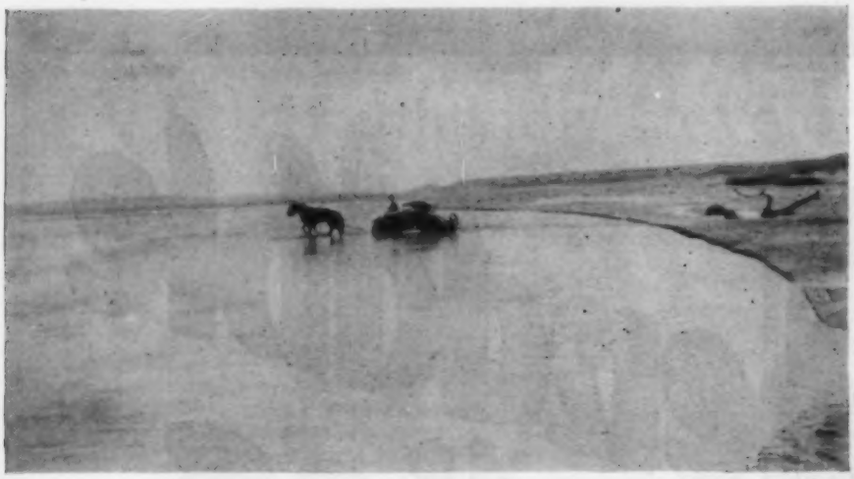


A car fording the Canadian River in the Panhandle section. This is near the point on the river where the new 2,500 ft. bridge is being built. Until the new bridge is put in service this is the only way to cross the river and during high waters no crossing can be made.

of the railroad company call for that to be the terminus of the line.

A station will be built at Isom, which is really a part of the town of Borger, and other points along the line, according to the demands of traffic.

What Bridge Means

If one isn't familiar with the Canadian River and its bed, it is hard to appreciate just how much the bridge which is now being built across the river in the field will mean to the operators now doing work on the north side of the river.

The following clipping from an Amarillo paper of several days back speaks volumes:

"A small coupe sank from sight in the quicksands of the Canadian River recently, four miles northeast of Borger. The two occupants, laborers for the Skelly Oil Company, were pulled out of danger by chance witnesses. The treacherous bed swallowed the vehicle halfway across. The driver and his passenger made their way to safety with their legs, sinking ankle-deep at every step. No trace has been found of the car. Attempts to raise it have been futile."

When the weather is fair and the river down, it can be crossed, in a manner, by the aid of teams. Let it rain any place along the upper portion of the river or any of its tributaries, and crossing is absolutely impossible by fording, even with any kind of man-given aid.

At such times the distance between two points, one on the south bank and one directly opposite on the north bank, is, as the trucks must travel to pass between them, about 150 miles.

The nearest bridge across the river at present is about 22 miles north of Amarillo, and this must be used if one can not ford the river in the field. The route to and from this bridge is most circuitous.

The trucking rate for materials moving across the river is, of course, very high, which makes operating expenses north of the river a rather considerable amount for that item alone.

The new bridge now under construction to serve the field across the river is at a point near the present fording place. The location is the center of section 62, block 46, H. & T. C. survey.

The structure will be about 2500 feet, or a half mile long, and will rest on concrete piers. Thirty 80-foot multiple steel trusses are being used in the fabrication.

By virtue of the fact that the county is financially unable to attempt the construction of the bridge on its own account, the Austin Bridge Company, the builders, will operate the bridge for a time as a toll proposition. Of the tolls collected 70 per cent will go into a sinking fund, and when this fund reaches the amount of $135,000, the payment of tolls will cease and the bridge will be turned over to the county. The 30 per cent to be retained by the bridge company will go to cover maintenance, insurance, interest on investment, etc.

Emsco Now Operating Houston Plant

Houston, Texas.—As a part of its expansion plan to place manufacturing plants as near as possible to the territory where its products are used, the Emsco Derrick and Equipment Company, headquarters in Los Angeles, now has a plant in operation in this city, and is turning out derricks at the rate of about one a day.

Rigs are placed regardless of surface conditions in the Panhandle field. Some are to be found perched on the point of almost unapproachable ridges while others are hidden away in deep ravines.

The plant is located on a 20-acre tract within the shipping district, with ample railroad facilities. Buildings are of galvanized iron and steel construction and the most modern manufacturing equipment has been installed.

Special equipment includes a big circular saw that cuts steel channels and all the heavy steel members that go into an Emsco derrick. This saw handles the heavy steel much as a wood saw does a log.

From the saw the steel goes to two scaps which shear, punch, and face the various shapes. These scaps are special machines and handle the material with great speed.

A 250-ton bulldozer molds the special shapes such as rims for bandwheels, etc. This machine is also used to fit parts where a press fit is required.

A universal punch and shear machine handles the larger members, up to 12 inches.

Emsco derricks are furnished either in steel, galvanized or painted finish, and a galvanizing plant is part of the regular equipment. The hot dip process is used. There are three vats where the steel is given a cleansing bath in acid. When all foreign substance has been removed the steel is dipped in the galvanizing solution at high temperature, and comes out with a coating guaranteed to be not less than two per cent.

The first order of derricks to be made up at the Houston Plant was for six derricks to be used in Colorado, by the Union Oil Company.

This plant aims to provide for the Mid-Continent and adjacent territory.

The plant is so laid out that additions can be made as demands justify.

A special point of the arrangement of equipment in the plant is that no piece of steel is turned after it enters the building. All material passes in a straight line until it is ready for the galvanizing plant, thus eliminating lifting, etc.

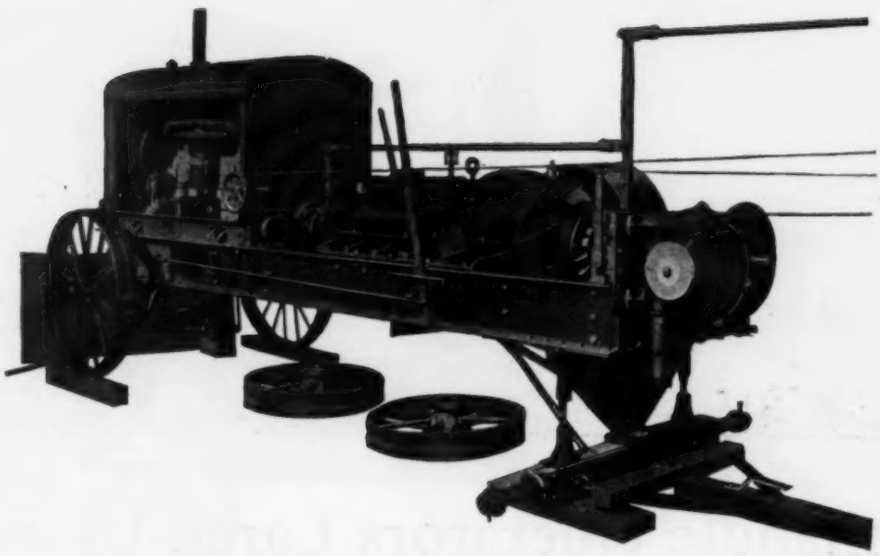
L. R. McCollum is general manager of the plant. Mr. McCollum has had many years experience in the derrick business.

Government Examination for Engineers

Washington D. C.—The U. S. Civil Service Commission has announced an examination to be held for the purpose of filling vacancies of petroleum engineers, natural gas engineer, associate petroleum engineer, associate natural gas engineer, assistant petroleum engineer and assistant natural gas engineer. Applications for the examination must be filed at Washington not later than September 7. Competitors for the above positions will be rated on publications, reports, or thesis to be filed with the applications, and education, training and experience.

The duties of the positions will be in connection with the drilling and production of oil and gas on government and Indian lands; the protection of oil, gas and water strata, studying underground conditions, resources, operating methods, etc.

Just Made for the Panhandle and West Texas



Flexibility, Portability, Adaptability and Economy of Young Mounted Gas Drilling Engine Makes It the Ideal Machine for the Wildcatter

If we had had West Texas and the Panhandle specifically in mind when we designed the Young Mounted Drilling Engine we could not have made a better machine for that vast drillers' paradise.

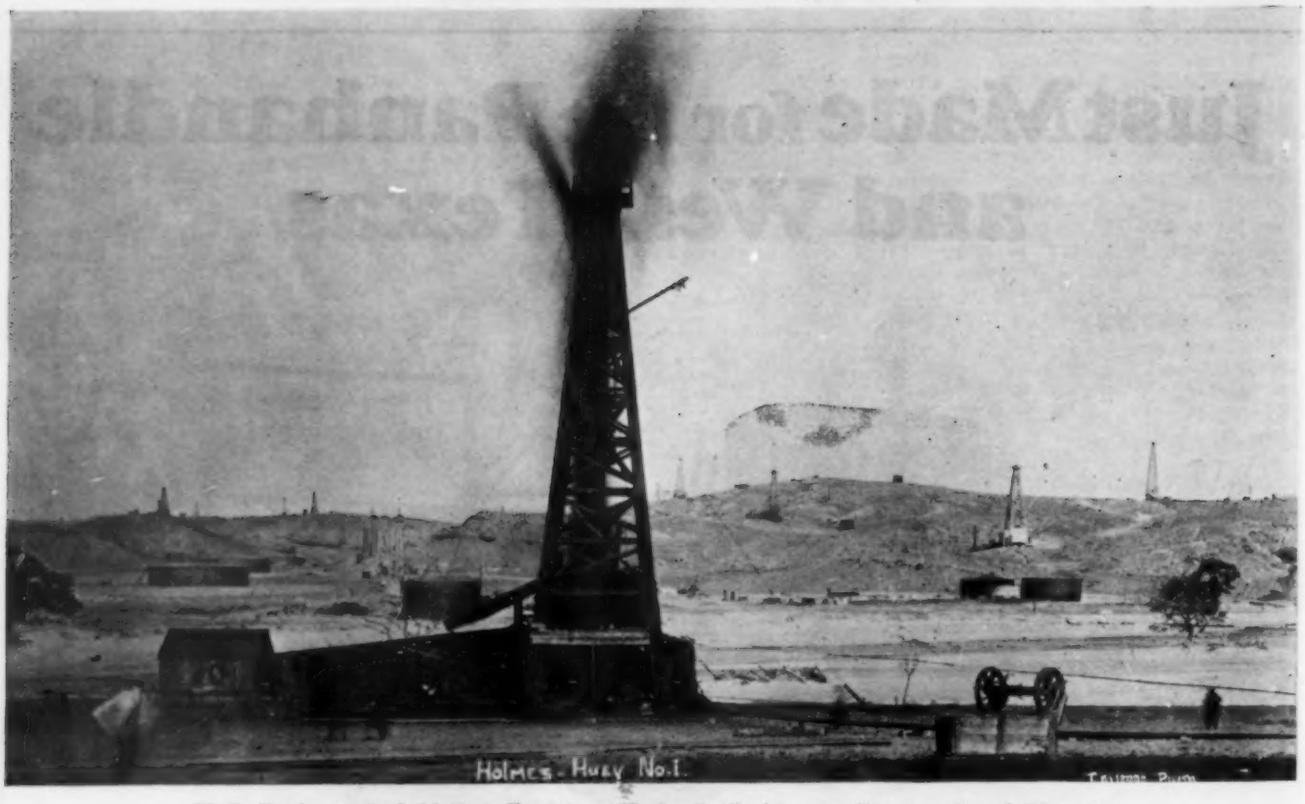
On wheels, it is easily and economically moved and quickly set up. No foundation timbers are required—just a few pieces of plank and a bunting pole, and you're ready for work.

Equipped with four cycle, four cylinder engine, it has the flexibility and speed essential for drilling and cleaning out work. Exceedingly economical on gas or gasoline, and, when equipped with radiator, requires little water.

We are confident that we have just the machine you want. Won't you ask for our Catalog O-3, and prices?

W. T. Young Drilling Engine Co.

Oil City, Pa.



W. R. Homles et al's Smith-Huey No. 1 in the Panhandle district, responding to a shot of 270 quarts

Panhandle Operators Large Users of Nitro-Glycerine

By Roye Munsell
Staff Representative

FEW fields have been shot to the extent and degree that the Panhandle field of Texas has. Soon after the field was opened up, operators found that shooting was, apparently a ready and most effective aid to securing maximum initial flush production, and the heavier the shot the better.

Panhandle field shooter loading up for a trip to the field

Of late, with the partial drainage of the granite wash and sandy lime pay formations, due to the rather intense development and the resultant decrease in flowing wells, shooting has been almost a standard of practice. Here again, the heavier the shot, apparently the better.

When one speaks of heavy shots in the Panhandle field, one talks in terms of 400 quarts, 500 quarts, 600 quarts, 700 quarts, and even 800 quarts.

The Jake Phillips well in the field was shot with no less than 870 quarts.

Now, to one who spends most of his time in the Oklahoma and Kansas portions of the Mid-Continent, that is admittedly a big shot, a tremendous shot. That many quarts would shoot several Bartlesville sand wells and leave a few cans over for some other time.

Apparently nothing but rather heavy shooting, though, will suffice in the Panhandle field to get the big flush initial production.

Hard Formations

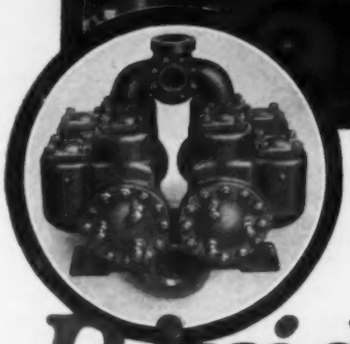
The formations in which the oil is found are particularly hard and close grained. Added to that there is very little, if any, gas in the pay and the rock pressure rarely exceeds 450 pounds.

To get a natural flowing well, a shot seems to be necessary, and a large shot, if a comparatively big flush flow is desired.

By examining the records of the pro-

GARDNER SUPER-BOOSTER

for rotary drilling and oil line service 14X7¼X14



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Divided fluid end!

Another Step Forward in Mud Pump Design

GARDNER has added another important improvement in mud pump design to those already standing to its credit—in the DIVIDED FLUID END which is a feature of our new "Super-Booster" Mud Pump. Each fluid cylinder is a separate casting. This construction adds great strength to the pump and means less breakage of fluid cylinders, economical replacements, and continuous operation.

Among this pump's other outstanding advantages are (1) Direct flow of liquid through cylinders, largely eliminating trouble due to improper filling; (2) Bevelled Valves; (3) Water end designed for 1500 pounds pressure; (4) Balanced steam valve; (5) Steam end designed for 225 pounds steam pressure. Ask for descriptive bulletin.

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GARDNER

Say you saw it in The OIL WEEKLY

Centerfield Oil Co.'s No. 1 Smith, Panhandle district, just after a 180 quart shot.

duction per well in the Panhandle field and the average initial production of the new wells the result of the shooting in terms of oil gotten to the surface is apparent.

When the epidemic of shooting set in these figures were increased in almost every case to a striking degree. The fact of the matter is that so great was the increase in production from the field due to the first orgy of shooting that the Texas Railroad Commission stepped in and forbade the shooting of wells unless pipe line connections and adequate steel storage was available to take care of the flush production.

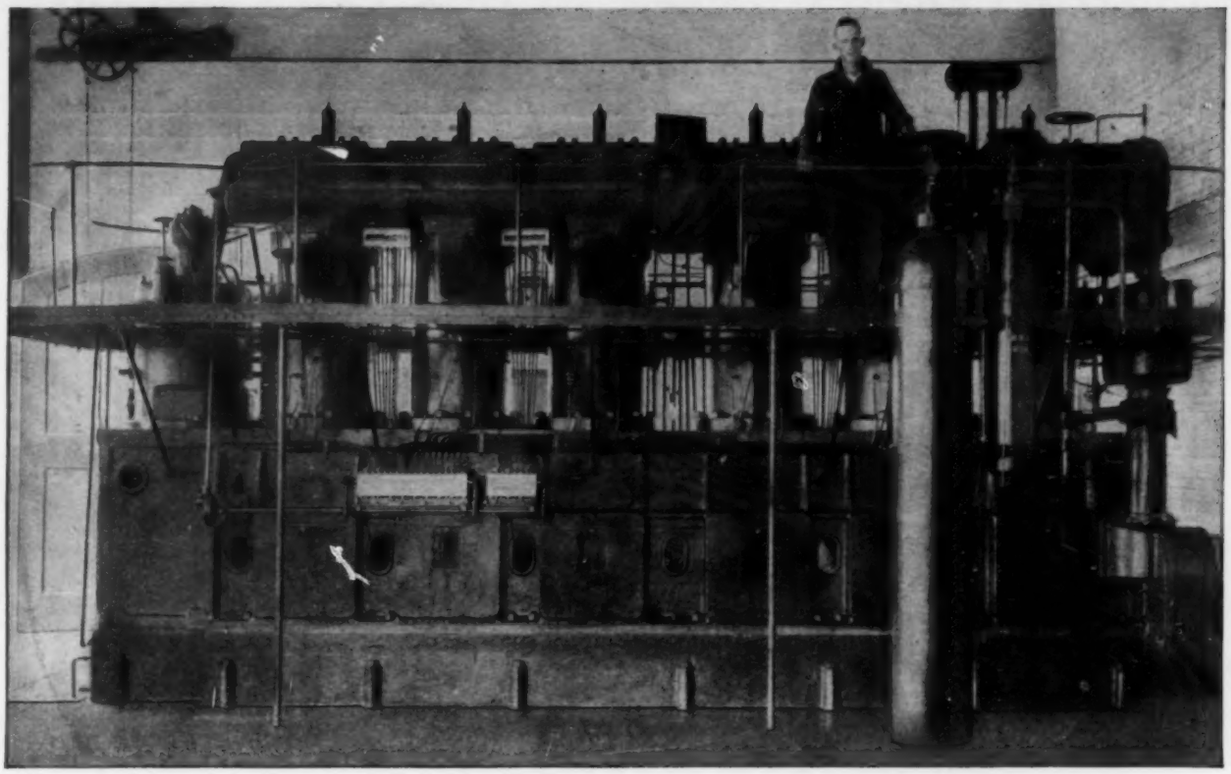
The commission's motives it might be said, were entirely worthy. Pipe line and storage facilities in the field were very scant and additions were not in any way keeping up with the increased demands from greatly augmented new production. The Railroad Commission clearly

Shooter placing the shot in the Centerfield Smith No. 1, Panhandle field.

PANHANDLE FIELD SHOT RECORD

Company, Farm and No.	Qts. Nitro	Sand	Prod. after shot
Amerada Pet. Corp. Wittenberg 1	180	3002-42	160 1st 18 hrs.
American R. Co., Wittenberg 1	120	2775-2808	150 1st 12 hrs.
Whittenburg 1 (shot again)	50	2985-3036	c. o.
Badger Oil Co., Lewis 1	210	2880-2960	200
Bear Creek Oil Co., Watkins 1	240	2911-98	5 (comp.)
Canadian Riv. O. Co., Kingsland 1	200	2858-2938	120 1st hr.
Walter Cline & Douglas O. Co., Wittenburg 1	320	3029-84	?
Coble-Wittenberg O. Co., Wittenburg 1	210	2910-79	bridged
Cockrell-McIlroy O. Co. Smith 1	300	2907-3006	270 1st 4 hrs.
Currie Bros. & J. R. Phillips Smith 1	600	2900-3030	bridged
Centerfield O. Co., Smith 1	180	2817-2905	50 1st 2 hrs.
Dixon Creek Oil Co., Smith 4	230	2913-72	260 (comp.)
Smith 5	400	2792-2890	100 (comp.)
Smith 8	240	2810-2976	200 .25 water
Smith 15	360	2900-78	700 (comp.)
Smith 18	310	2945-3023	490 1st 12 hrs.
Smith 29	180	2850-2900	560
Double Five Oil Co., Cockrell 1	125	2963-3063	300
J. B. Dunnigan et al, Wittenburg 1	300	.438-3026	1,000
Echo Oil Co., Smith 2	210	2845-2901	clpsd cas.
Gates Oil Co., Kingsland 1	70	2958-3028	75 1st hr & bgd.
Kingsland 2	70	2960-3030	240 swb.
Kingsland 3	115	2954-3040	80 (comp.)
Kingsland 4	70	2953-3030	75 1st hr.
Gibson Oil Corp., Kingsland 1	80	2877-2905	110 (comp.)
Gibson O. Corp. et al, Kingsland 1	200	2789-2860	c. o.
Gulf-Cline & Panhandle, Dial et al 7	140	2725-98	50 swb
Dial et al 8	240	2980-98	35 1st hr.
Dial et al 9	120	3000-88	80 swb
Dial et al 10	75	2845-2895	600 by bridge
Fee 1	250	2945-3013	420
Hodges 1	90	2720-80	70
Wittenburg 1	150	2919-3017	90 swb
Gulf Prod. Co., Cockrell 1	200	2951-	160
W. Scott Heywood et al Christian 1	600	2945-3104	220 flow & swb
Cockrell 1	270	2950-3040	350
W. H. Holmes et al, Smith 1	70	2725-77	150 per hr 1st 5 hr
Holmes-Currie & McKnight Smith 1	240	2703-73	c. o.
J. K. Hughes Dev. Co. Kingsland 2	90	2924-74	800
Kingsland K-5	150	2878-2915	40 1st hr.
Kingsland 6	330	2835-75	300 1st hr after co
Kingsland 1-A	300	2840-95	bgd
Hutchinson Co. O. Co. Smith 1	70	2950-3000	30 swb
Japhet Prod. Co., Smith 1	240	2800-53	bgd
J. H. Lenix et al, Johnson Bros. 1	20	2940-46	10 1st hr.
Lucky Ten Oil Co., Smith 1	360	2763-2880	5,000
McIlroy Bros., Smith et al 1	210	2772-2845	890
McIlroy O. Co., Smith et al 1	210	2815-2854	600 1st 2 hrs. est.
S. D. & W. W. McIlroy, Smith 1	240	2920-98	800 (comp.)
Smith 3	320	2927-3017	900
McIlroy-Herring et al, Smith 1	210	2788-2858	60 per hr.
Smith 2	200	2805-45	160
J. P. McKinney-Bayer Oil Corp. Weatherly 1	90	3014-36	25, est.
McMann O. & G. Co., Smith 1	160	2707-55	500
Smith 2	160	2743-63	400
Smith 3	360	2721-85	510 1st 6 hrs.
Smith 4	160	2710-63	1,600 (comp.)
Smith 5	180	2709-2761	2,000 .15 water

Company, Farm and No.	Qts. Nitro	Sand	Prod. after shot
Marland O. Co., Belle Wisdom	330	2970-3050	1,500
J. H. Middleton et al, Smith 1	160	2862-2900	10
Smith 2	160	2818-2868	10
Mid-West Explor. Co. & W. H. Holmes, Smith 1	140	2885-2940	150 (comp.)
Smith 2	180	2943-3000	600 (comp.)
Smith 3	140	2781-2850	400
A. D. Morton et al, Johnson 1	40	2956-76	700 (comp.)
Newby O. Co., Cockrell 1	120	2980-3031	400 (comp.)
New Domain O. & G. Co., Kingsland 1	170	2887-2941	30
Panhandle Ref. Co. et al Dial-Perkins 1	40	2924-28	
Dial-Perkins 1 (shot again)	470	2980-3045	90 swb
Dial-Perkins 3	400	2905-57	1,650
Pattison-Lenix O. Co., Smith 1	505	2910-3005	5,850
Phillips Pet. Co., Wittenburg 2	100	2950-95	360 by bdg.
Wittenburg-Coble 1	60	2930-71	500 1st 12 hrs.
Wittenburg-Coble 2	80	2895-2935	140 1st hr
Wittenburg-Coble 3	100	2902-53	400
Wittenburg-Parks 2	40	2773-93	6,400
Wittenburg 1	90	2895-2932	100
Wittenburg-Huff 1	100	2859-99	1,000
Wittenburg-Huff 3	80	2882-2923	150
Wittenburg-Huff 4	60	2926-2950	1,000
Kingsland 1	200	2789-2860	c. o. to shoot again
Wittenburg-Huff 7	70	2968-74	250
Prairie O. & G. Co., Weatherly 2	20	3115-23	100
Phillips Pet. Co. & Pulaski O. Co. Cockrell 1	520	2955-3100	30 1st hr.
Smith 1	200	2792-2872	150
Smith 2	120	2931-79	650
Smith 3	60	2814-62	240 swb
Phillips Pet. Co. et al Smith 4	120	2881-3922	200
Phillips & Pulaski, Wittenburg 1	60	2860-90	380 (comp.)
Phillips Pet. Co., Johnson-Barnum 1	60	2802-12	150
Phillips et al, Weatherly 1	90	3040-65	30 est.
Relief Oil Co., Smith 2	320	2710-85	200
Roxana Pet. Corp., Smith 3	180	2915-82	2,740
Smith 2-B	150	2800-2858	120
Smith 3-B	110	2810-73	60
Skelly Oil Co., Johnson 1	160	2968-3010	
Johnson 1 (shot again)	310	2969-99	200
Wittenburg 1	10	2938-48	
Wittenburg 1	15	2933-48	
Wittenburg 1	20	2928-48	200
Wittenburg 4	20	2891-2911	135 swb 1st 6 hrs.
Wittenburg 4	20	2891-2911	c. o.
Skiatex Pet. Co., Kingsland 1	576	2826-60	2,100
Kingsland 2	470	2808-2939	455 by bdg 1st 5 hr
Kingsland 4	570	2720-2847	collapsed cas.
J. L. Smith, Smith 1	100	2847-2942	75 1st hr.
Smith 1	320	2907-76	30
Spring Creek O. Co., Smith 1	390	2691-2780	1,350
Summit O. Corp., Wittenburg 2	200	2950-3030	500
Travelers O. Co., Kingsland 1	80	2870-2945	180 (comp.)
Kingsland 2	180	2913-75	1,000
J. D. Ward et al, Cockrell 1	520	2954-3090	1,658 1st 10 hrs.
Westex Oil Co., Wittenburg 1	90	2923-51	1,300
White Eagle O. & R. Co. Johnson Bros 1	60	2699-2717	1,100
Smith 1	300	.....	2,160
Smith 3	360	2693-2771	1,980
Wittenburg 2	200	2718-80	130
Wittenburg 2	180	2716-2780	50



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THE fuel efficiency of a McIntosh & Seymour Diesel Engine is fixed into the design, and unlike that of a steam engine, must stay close to the high point *for life*, and is practically as high in a very small as in a large unit. Even a 100-hp. Diesel engine of good design will show as good a fuel rate per horsepower hour as can be obtained from a 50,000-hp. steam turbine of the most approved construction.

This means that the purchaser of a Diesel engine is reasonably safe against improvements which would depreciate his investment, whereas steam units have frequently had to be scrapped within a few years because they could not longer compete with later steam types.

Perhaps the most convincing proof of safety in choosing Diesel power is the fact that *no McIntosh & Seymour Diesel installation has ever become obsolete*, and our earliest models are still holding their own against all comers. Power users who look to the future can profit from our free advice when overhauling present equipment or arranging for bigger capacity.

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McINTOSH & SEYMOUR DIESEL ENGINES

41

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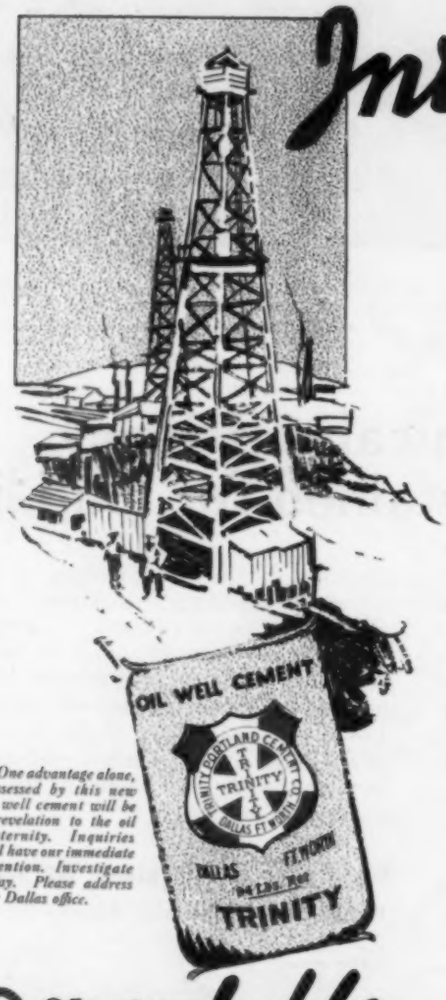

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Dependable

TRINITY PORTLAND CEMENT CO.
DALLAS AND FORT WORTH, TEXAS

Enough Oil Land in West Texas to Keep Drills Busy Many Years

Been under way for ten years in area which covers 33 counties

By H. H. King
Staff Representative

San Angelo, Texas—After more than ten years of erractic wildcat efforts by both major companies and independent operators the West Texas district, embracing 33 counties, has more proven and semi-proven oil producing acreage awaiting the drill than can be economically developed in several years. New discoveries and extensions to known oil areas have been occurring in rapid order within the past year, with the most important oil strikes being made near the Crane-Upton County line in the Hurdle section.

The West Texas district has been rated as having a large potential oil production since 1919-21, when a series of wildcat tests in the hands of individual operators and promoters threatened to establish fields in Glasscock, Reeves, Loving, Pecos and Mitchell counties. The latter county is the only one to come through with an oil field as result of these early discoveries, and its Westbrook field goes down in history as being the first of any consequence in the western part of the state. However, the Westbrook field failed to offer more than small pumpers from the dolomitic lime pay around the 3000-foot level, with a few completions in the upper pay, so the West Texas district did not command the respect and attention of the Mid-Continent operators until the discovery of the Big Lake field, in May, 1923.

The Westbrook field, in Mitchell County, was discovered in October, 1920, by the Underwriters Producing and Refining Company's Abrams 1, with an initial production of 25 barrels daily from pay at 2470-80 feet. This well continues to pump on an average of 27 barrels daily after having been drilled down to the main pay in June, 1924, by the California Company, which acquired the entire holdings of the discoverers several years previous to deepening. The total yield of the discovery well amounts to approximately 42,500 barrels to date, while 13,385 barrels of this total production came before the ownership of the well changed. Development that has followed in the wake of the Westbrook field discovery has uncovered a large area offering pumpers with an average initial output of 80 barrels, but the proven acreage is mostly in the hands of the California Company and a few others that are adhering to a restricted drilling program.

Big Lake Field

Other than an occasional show of oil in a wildcat test, West Texas failed to offer any development of importance after the opening of the Mitchell County field until the Texon Oil and Land Company struck a small flowing well on May 28, 1923, in the first test drilled in Reagan County. This well marked the beginning of the Big Lake field, so named after the nearest town at that time, and scored an initial of 80 barrels daily by heads from dolomitic lime pay at 3020-38 feet.

The Big Lake field did not command outstanding interest until June 24, 1924, when a 1400-barrel producer was completed to the northeast of the discovery, thereby giving West Texas its first big producer. This well and other big ones that followed in succeeding months furnished the turning point in West Texas lease buying and wildcat drilling history, and leading Mid-Continent operators have been fortifying themselves with West Texas leases since the Big Lake field proved that flush oil can be had in the district.

The Big Lake field's total crude recovery up to July 1, 1926, amounted to 15,681,300 barrels, while the discovery well supplied 52,255 barrels of this total amount, and continues to pump about 35 barrels daily.

The Big Lake field's big wells in the latter part of 1924 and early 1925, stimulated wildcat work throughout Reagan County and those adjoining. The first successful strike was made about 15 miles to the south, in Crockett County, on June 8, 1925, when the World Oil Company's Powell ranch 1 made 25 barrels from sandy lime (dolomitic) at 2644-47 feet. This well and surrounding acreage was turned to Humble and Marland Oil Company at an attractive consideration shortly after the oil discovery. The development that followed this discovery has been somewhat similar to that of Mitchell County, in that production has not been large enough to spur the lease owners into drilling up their holdings, while the producing area has apparently been defined.

Playing a cheap acreage and a surface high, J. P. Johnson and Geo. B. McCamey extended oil production further west to the Hurdle district in the southwest part of Upton County on September 9, 1925, with a 70-barrel pumper from sandy lime pay at 2161-2220 feet. This well and surrounding acreage was turned to the Republic Production Company before final completion for a consideration of $500,000. Other completions that followed on nearby acreage proved of small caliber, until the operators began stepping out into virgin territory, then lower producing horizons and flowing wells resulted.

Hurdle Development

The Independent Oil and Gas Company's wildcat test on the Taylor farm, Sapp survey, extended oil production about five miles from the original Hurdle pool, across the line in Crane County, in February, 1926, with an initial flow of 140 barrels at 2038-45 feet, and continues to flow natural at the rate of 125 barrels daily. The stretch of territory located between this well and the original Hurdle district is now being given an intensive development play, while the interest was spurred on by the completion of a 3000-barrel flush producer on July 4, 1926, from the Dixie Oil Company's Hughes 2 from sandy lime pay at 2025-49 feet. The Dixie well is the largest West Texas completion outside the Big Lake field.

Church-Fields et al's wildcat test on University land in the northeastern part of Crane County, caused the play surrounding the Hurdle district to take a northwest course, April 19, 1926, when a 190-barrel well was completed from sandy lime pay at 3038-40 feet. This well opened a new source of crude supply about 14 miles north and slightly west of the Independent well, and was responsible for a big leasing campaign taking place across northern Crane, Ector and Winkler counties to the New Mexico border. Magnolia Petroleum Company bought out Church & Fields' one-sixth interest in the well and 40-acre lease, and about 1240 acres of nearby leases for $150,000 cash and $250,000 payable out of one-third of the oil produced.

Within a week after the Church & Fields' discovery, F. P. Zoch and Marland Oil Company's Benton 1, located about three miles north and slightly east of the Independent wildcat producer, was brought in making 110 barrels at 2564-74 feet, thereby further proving the theory that the trend of production was to be found in a northwest direction from the Hurdle district. The stretch of untested acreage lying between the Benton producer and the Church & Fields discovery well furnished the largest wildcat discovery well when Gulf Production Company's J. T. McElroy 1, section 203, swabbed and flowed 215 barrels initial on June 30, after drilling sandy lime pay at 2728-44 feet. The McElroy well was recently deepened to 2750 feet, and the well gauged 600 barrels during the first 24 hours, with the bit still in the pay. Deeper drilling will not be tried until ample facilities are available for handling the crude. Gulf controls approximately 18,000 acres around this well, with only a few quarter sections owned by Bill Dunning, Jr., drilling contractor on the McElroy discovery producer, preventing it from being a solid block of leases. This discovery apparently puts Gulf in the "big money" in West Texas, and promises to

(Continued on page 160.)

Recent Discoveries Promise Recovery of Coastal Position in Importance

Three proven domes, extension of three old areas and three entirely new domes included in the schedule

By Wallace Davis
Staff Representative

Houston, Texas.—Discoveries within the past seven months in the Texas Gulf Coast have given this territory a chance to play a bigger part in Texas production than at any one period since the northern sections of the state first took the lead in crude output early in 1919. Wildcatting and exploitation around old coastal salt domes has resulted in revealing more sources of production since late in 1925 than had been found during the previous six years combined.

The opening of production around three new domes, the opening of new deep production in extensions to three old producing domes and the discovery of three formerly unknown domes in the Texas coast has been the development since shortly before the close of the past year.

One factor exists which is retarding development that would bring greater flush production to the heavy crude area. This is the centralization of single big company control around several of the domes. The Gulf is the sole owner of probable productive acreage surrounding Orchard dome in Fort Bend County, which gave up its first production about the middle of January. Lack of competition has resulted in slow development, the second producer not having been brought in until late in May. Only one well is now drilling at Orchard, and faster development is not expected until there is sufficient demand to justify the laying of a pipe line to Big Creek, the nearest field. Rycade Oil Corporation, with more than 12,000 acres around Nash dome on the Brazoria-Fort Bend County line, is taking its time about running up production there, and although five rigs are running in the field and three producers are running into the Humble pipe line extension from West Columbia, Nash dome is not numbered among the few fields that might hurt the coastal crude market. Allen and Clemens domes, located five miles apart in Brazoria County, is practically in the hands of Roxana Petroleum Corporation. Commercial production has yet not been recovered at either of the domes but 23 gravity crude was found in a shallow cap rock hole that failed to produce. Only one rig is running at each of the domes at present, and with the lack of close in competitive acreage no rush drilling is due to come from either of these points.

Spindletop

The recently opened southwest extension to Spindletop field holds the center of attention in the Gulf Coast today. It is this point above all other sources known in the coastal country at present that is predicted to run high in production figures. With 15 wells turning out roughly 23,000 barrels of heavy crude at the opening of this week and 34 other wells drilling, Spindletop is expected to reach comparatively big proportions for a coastal field. Although Yount-Lee Oil Company holds the bulk of the choice acreage in the heart of the new productive area, there are sufficient competitive blocks to have caused the recent development that has reached boom activity. The Gulf, Sun, Rio Bravo, and Atlantic are in the midst of the play aside from many small operating companies, including the Seven Oil Company, Unity Oil Company, K. Kishi, B. Deutser et al, Porch & Telshaw and Barbe et al.

Acreage in the new Spindletop extension no doubt broke former Gulf Coast records in value recently when Atlantic Oil Producing Company paid Marrs McLean $20,000 per acre for five acres on the edge of new producing blocks, and when the Gulf Production Company paid $140,000 cash and $60,000 to be paid in oil for one and one-quarter acres with a producer of about 2,000 barrels to Hines et al.

Following the new discovery off the edge of Spindletop when several 5000-barrel wells were completed within two weeks and the increasing of Yount-Lee's J. O. Davis No. 1 to 9600 barrels, old coastal operators placed estimates as high as 70,000 barrels in six weeks on the new field. Conservative estimates now, after more recent completions are falling short of 3000 barrels and showing tendencies of hurried declines in production, do not place the peak at more than 40,000 barrels. Regardless of any definite peak within a given period or the rush drilling now under way, Spindletop offers signs of once more holding first place for time to come in Gulf Coast producing circles. The off dome sands are apparently duplicating in some measure what Humble field did after the real discovery of deep sand crude in 1917, after producing 45,000,000 barrels from the shallow cap rock and since giving up more than 50,000,000 barrels from the flanks of the dome.

The big production from Spindletop deep sands is coming from around 2700 to 2800 feet, and the gravity is testing between 23 and 25 Baume.

Liberty County

An extension of approximately 8000 feet to the west of South Liberty pool in Liberty County which was opened by the Humble Oil & Refining Company late in February and proven with a second well three weeks ago, stands out as a strong potential source of supply. The first well, the Welder No. 1, failed to make a paying producer and the second has turned to a large percentage of salt water, accompanied by hurried decline in production from a 3000 barrel initial, but presence of crude in no mean quantities has been proved by the Humble wells, and action is following. The Gulf, probably the holder of best acreage aside from the Humble, has made location for drilling several hundred feet to the south of the discovery well, and the Humble has located an offset. Vacuum Oil Company, with some close in acreage to the east of the present activity, is apparently standing third in possible chances for production in the new Liberty extension.

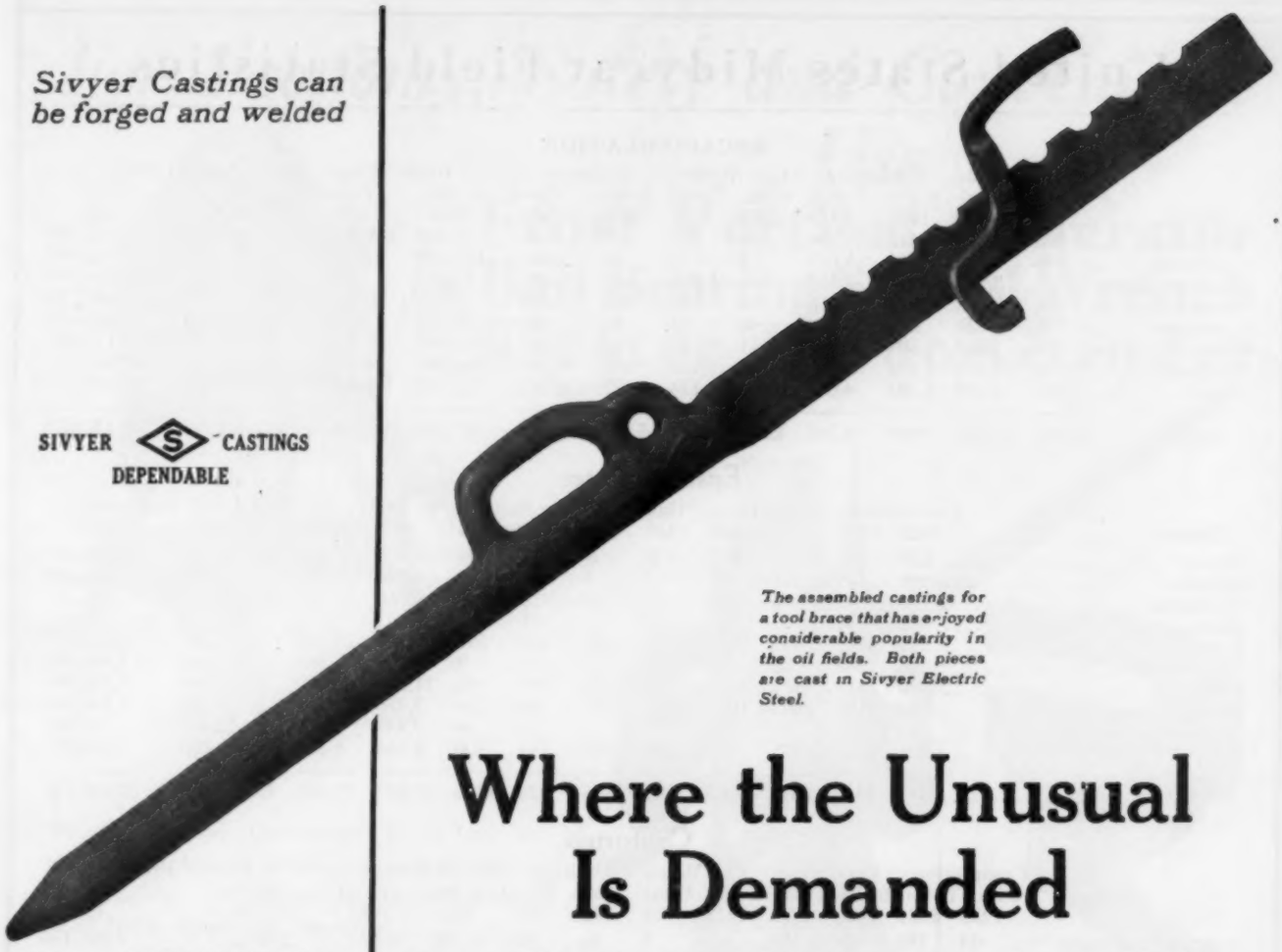
The deep sands of Sour Lake dome in Hardin County promise to be a good bet for production following the discovery by Yount-Lee Oil Company late in 1925 of 38 gravity crude at 4200 feet. This company has completed four wells averaging 2000-barrel initials within the past seven months in the deep sand extension and the Humphreys Corporation has brought in one well of about the same yield. More than a half dozen wells are now drilling near the heart of the extension in an effort to find still better production.

Lockport field in Calcasieu Parish, Southern Louisiana, looms as a possible source of disturbance in a small way to the Texas heavy crude market. Development there by the Vacuum Oil Company on leases held jointly by the Vacuum and Gulf indicates that this section has strong possibilities of being the best source of heavy crude supply in South Louisiana. Completion of the Freiberg & Wolfe No. 1, July 26 for an estimated 600 barrels of oil and 25,000,000 cubic feet of gas from 5476 feet brings production from a level more than 500 feet deeper than former Gulf Coast producers. It also extended the field 750 feet to the southwest, and opens the seventh producting sand ranging from 2458 feet downward to below the mile point.

Moss Bluff dome in Chambers County, discovered late in May, is the newest prospect in the Texas coastal territory. A single location of Roxana Petroleum Corporation is the only evidence of development thus far, but acreage is so divided as to insure intense drilling in the event production is discovered.

Sivyer Castings can be forged and welded

SIVYER S CASTINGS
DEPENDABLE



The assembled castings for a tool brace that has enjoyed considerable popularity in the oil fields. Both pieces are cast in Sivyer Electric Steel.

Where the Unusual Is Demanded

Sivyer Electric Steel Castings have time and time again proven themselves ideal for the unusual parts where thin section construction and exceptional strength are demanded. The reasons for this continued success with difficult work are evident. Sivyer foundry practice provides the careful molding, heading and gating that eliminates the shrinks common to most thin section casings. In addition, the inherent strength of Sivyer Steel and Sivyer Alloy Steels withstands out-of-the-ordinary abuse and wear. The tool brace castings, pictured above, are typical of the type of work Sivyer is called upon to handle. These castings are subjected to the strains and rough treatment that accompany most any form of oil field work. Yet, to date, not a single one of them has been reported as having failed in service.

Pioneering in Oil Field Work

It is a significant fact that many of the parts that are now seeing active service in the oil fields were first cast successfully by Sivyer.

In this light Sivyer Steel Castings have often been chosen in preference to, and often to replace, parts made in other metals and by other methods.

It has been found that Sivyer Electric Steel Castings can, in many cases, provide greater strength—a more uniform trueness to pattern—a more uniform interior soundness—a minimum of weight.

In addition, Sivyer trueness to pattern and smooth surfaces often reduce machining to a bare minimum—and Sivyer soundness effects a similar reduction in scrap.

If some of the parts which you are now using are giving trouble in service or assembling—or if you have some new part that is as yet untried—Sivyer Electric Steel or Sivyer Electric Alloys may furnish a metal for you.

And Sivyer foundry practice may be able to give you a part that will do the things that you would like to have it do.

At any rate, the cost of sending us blue prints is not excessive. And we shall be glad to look them over and to tell you what we can do for you.

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Say you saw it in The OIL WEEKLY

United States Midyear Field Statistics

RECAPITULATION

State—	Completions 6 Mo. 1926	Completions Total 1925	Producers 6 Mo. 1926	Producers Total 1925	Gas Wells 6 Mo. 1926	Gas Wells Total 1925	Failures 6 Mo. 1926	Failures Total 1925	Initial Prod. 6 Mo. 1926	Initial Prod. Total 1925	Annual Prod. 6 Mo. 1926	Annual Prod. Total 1925
Arkansas	596	1,771	427	1,354	50	108	119	309	54,339	1,384,155	31,389,951	78,717,700
California	446	1,434	401	1,033	1	1	44	100	137,009	615,181	110,251,388	231,768,982
Eastern States	3,383	8,516	2,016	5,165	741	1,855	626	1,496	33,033	75,467	18,171,650	37,616,700
Kansas	928	1,523	542	916	26	52	360	555	74,128	188,163	18,654,998	34,497,756
Louisiana	456	530	315	294	46	52	95	184	64,164	65,583	10,896,313	19,848,417
Mount'n States	377	869	304	746	11	20	62	103	124,901	161,442	19,066,875	37,153,875
Oklahoma	2,542	4,479	1,401	2,557	261	1,112	880	1,501	416,941	813,348	82,724,192	167,951,575
Texas	3,303	6,449	1,283	4,043	95	124	1,925	2,282	453,118	1,330,840	62,490,928	150,027,406
Totals	12,031	25,406	6,689	16,162	1,231	2,644	4,111	6,600	1,357,633	4,640,924	353,646,295	759,131,872

Eastern States

State—	Completions 1926	Completions 1925	Producers 1926	Producers 1925	Gas Wells 1926	Gas Wells 1925	Failures 1926	Failures 1925	Init. Prod. 1926	Init. Prod. 1925	Annual Production 1926	Annual Production 1925
Illinois	129	261	91	167	2	8	36	86	3,843	8,979	3,838,000	7,260,000
Indiana	69	129	42	83	5	5	22	41	1,066	1,565	387,500	830,000
Michigan	6	2	6	2	..	..	..	..	177	35	.....	.....
Mississippi	1	..	..	..	..	..	1	..	....	....	.....	.....
Kentucky	594	1567	435	1471	21	122	138	397	5,499	21,159	3,057,200	6,819,600
New York	96	262	88	251	1	3	7	8	318	1,388	915,300	1,666,000
Ohio	870	2411	474	1406	201	529	195	476	11,246	23,630	3,558,000	7,226,000
Pennsylvania	773	2108	593	1662	117	277	63	169	3,370	8,655	3,534,200	7,930,000
Tennessee	24	43	12	19	1	5	11	19	3,448	3,653	22,450	16,100
West Virginia	821	1733	275	527	393	906	153	300	4,066	6,398	2,859,000	5,869,000
Totals	3383	8516	2016	5165	741	1855	626	1496	33,033	75,467	18,171,650	37,616,700

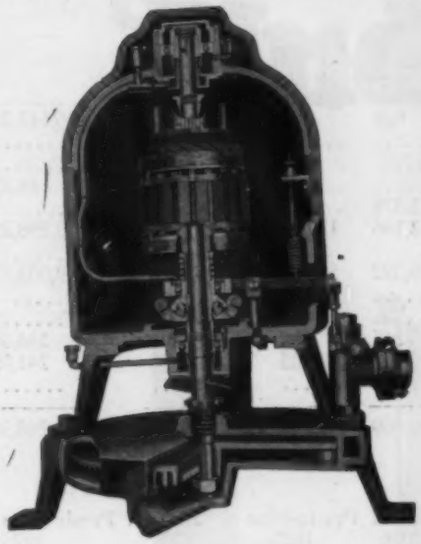
California

Field—	Completions 6 Mo. 1926	Completions Total 1925	Producers 6 Mo. 1926	Producers Total 1925	Gas Wells 6 Mo. 1926	Gas Wells Total 1925	Failures 6 Mo. 1926	Failures Total 1925	Initial Production 6 Mo. 1926	Initial Production Total 1925	Yearly Production 6 Mo. 1926	Yearly Production Total 1925
Athens-Rosecrans	44	190	28	179	..	1	16	10	15,087	132,335	3,526,235	7,391,456
Bandini	..	2	..	..	..	..	..	2	.....	.....	.....	.....
Baldwin Hills-Ingl'w'd	30	195	26	183	..	..	4	12	18,400	204,828	9,679,187	19,029,742
Brea-Richfield	10	26	8	24	..	..	2	2	2,660	13,963	2,363,757	4,258,973
Caruthers	..	1	..	..	..	..	..	1	.....	.....	.....	.....
Cat Canyon	..	1	..	1	..	..	..	..	.....	200	.....	.....
Claremont	..	1	..	..	..	..	..	1	.....	.....	.....	.....
Coalinga	..	..	..	..	..	..	..	..	.....	.....	3,703,096	7,811,886
Comanche Point	..	2	..	..	..	..	..	2	.....	.....	.....	.....
Coyote	..	3	..	3	..	..	..	..	.....	740	3,075,466	.....
Culver City	..	1	..	..	..	..	..	1	.....	.....	.....	.....
Cypress	..	1	..	..	..	..	..	1	.....	.....	.....	.....
Dominguez	6	50	6	47	..	..	..	3	1,732	46,952	3,924,711	13,449,723
Elk Hills	5	12	5	10	..	..	..	2	865	3,035	5,890,214	11,833,366
El Segundo	1	..	..	..	..	..	1	..	.....	.....	.....	.....
Fairview	2	..	1	..	..	..	1	..	6	.....	.....	.....
Fullerton	..	..	..	..	..	..	..	..	.....	.....	3,047,756	4,490,298
Hawthorne	..	1	..	..	..	..	..	1	.....	.....	.....	.....
Hermosa	..	1	..	..	..	..	..	1	.....	.....	.....	.....
Homer	..	1	..	1	..	..	..	..	.....	15	.....	.....
Hovey Hills	..	7	..	7	..	..	..	..	.....	1,295	.....	.....
Huntington Beach	15	69	12	68	..	..	3	1	4,015	16,0.9	8,162,437	15,861,954
Jacalitos Dome	..	1	..	..	..	..	..	1	.....	.....	.....	.....
Kern Front	5	8	4	5	..	..	1	3	575	575	2,184,339	5,951,217
Kettleman Hills	..	1	..	..	..	..	..	1	.....	.....	.....	.....
Keystone	..	1	..	..	..	..	..	1	.....	.....	.....	.....
La Habra	..	1	..	1	..	..	..	..	.....	100	.....	.....
La Mirada	..	4	..	1	..	..	..	3	.....	252	.....	.....
Long Beach	192	139	190	136	1	..	1	..	53,244	49,888	19,917,904	40,116,683
Los Angeles	..	1	..	1	..	..	..	..	.....	1,535	334,835	630,813
Lost Hills	..	1	..	1	..	..	..	..	.....	100	815,026	1,736,960
McKittrick	..	8	..	6	..	..	..	2	.....	915	989,263	2,096,736
Midway	56	117	53	107	..	..	3	10	8,975	55,052	16,969,434	37,391,003
Montebello	12	19	12	18	..	..	..	1	2,897	12,793	3,236,072	6,895,949
Monterey	..	3	..	3	..	..	..	..	.....	388	.....	.....
Newport	2	8	1	2	..	..	1	6	50	140	17,950	31,014
Palms	..	1	..	..	..	..	..	1	.....	.....	.....	.....
Plaza Del Rey	..	1	..	..	..	..	..	1	.....	.....	.....	.....
Poso Creek	1	..	1	..	..	..	..	..	125	.....	.....	.....
Raisin City	..	2	..	..	..	..	..	2	.....	.....	.....	.....

(Continued on page 152)

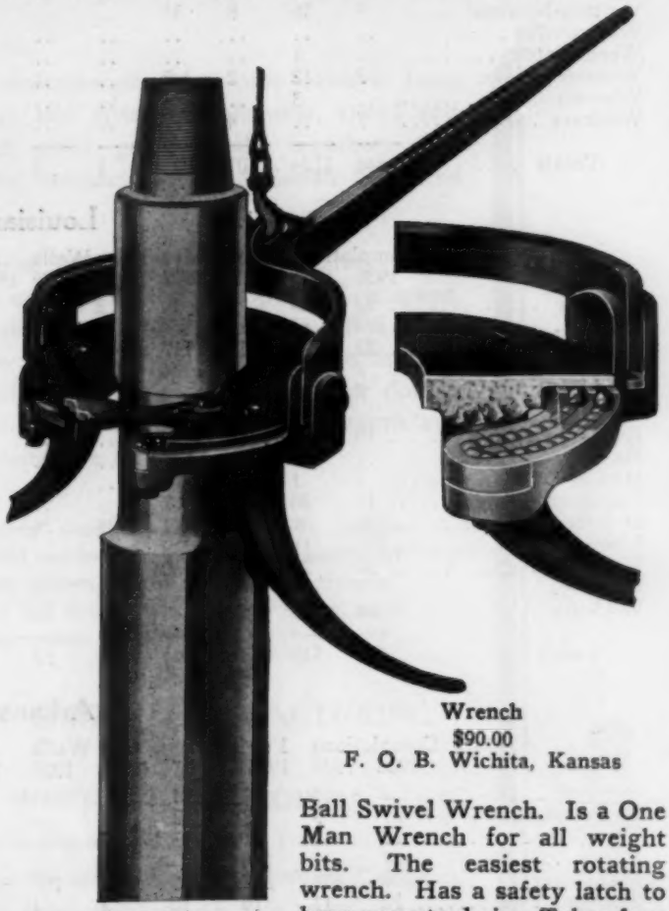
For Economy, Safety and Convenience Use

Frost Vertical Generator
Ball Bearing Swivel Wrench
Kiester Turbo-Grinder



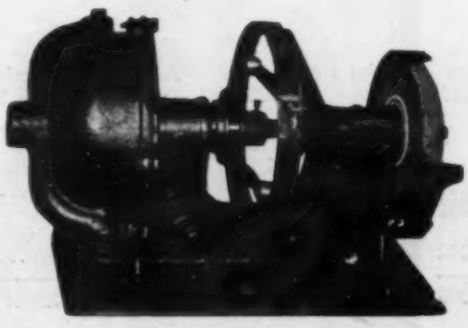
Generator
$250.00
F. O. B. Augusta, Kansas

Frost Vertical Generator floats on a cushion of steam which eliminates bearing trouble. Consequently you will have very little Electrical Expense.



Wrench
$90.00
F. O. B. Wichita, Kansas

Ball Swivel Wrench. Is a One Man Wrench for all weight bits. The easiest rotating wrench. Has a safety latch to keep your tools in. Takes four squares 6", 5", 4" and 3¼". The handle has two holes for balancing light and heavy tools and is designed to not fly out of reach.



Grinder
$55.00
F. O. B. Augusta, Kansas

Kiester Turbo-Grinder driven by steam or air has a governor that drives the grinder wheel at a safe speed. Its speed grinds your tools and does not burn them.

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San Erindo	..	3	..	..	..	..	..	3	.....	.....	.....	.....
San Luis Obispo	..	1	..	..	..	..	..	1	.....	.....	.....	.....
Santa Barbara	..	8	..	6	..	..	..	2	.....	1,025	.....	.....
Santa Clara	..	1	..	..	..	..	..	1	.....	.....	.....	.....
Santa Maria	1	..	..	..	..	..	1	..	.....	.....	949,584	.....
Santa Fe Springs	6	2	3	2	..	..	3	..	624	400	8,929,200	136,547,247
Seal Beach	3	2	..	..	..	..	3	2	.....	.....	.....	.....
Signal Hill	..	1	..	1	..	..	..	..	.....	85	.....	.....
Summerland	..	..	..	..	..	..	..	..	.....	.....	23,002	48,213
Sunset	15	..	15	..	..	..	..	..	3,378	.....	.....	.....
Torrance	21	178	21	175	..	..	..	3	3,146	17,441	5,406,786	13,298,212
Tulare	..	2	..	..	..	..	..	2	.....	.....	.....	.....
Ventura-Newhall	9	36	8	33	..	..	1	3	19,392	53,785	6,549,110	9,003,751
Watsonville	..	..	..	..	..	..	..	..	.....	.....	10,448	.....
Weed Patch	..	1	..	..	..	..	..	1	.....	.....	.....	.....
Wheeler Ridge	2	12	2	8	..	..	..	4	245	882	157,206	346,364
Whittier	..	3	..	3	..	..	..	..	.....	305	388,370	741,090
Wildcats	7	..	4	..	..	..	3	..	1,640	.....	.....	.....
Totals	446	1134	401	1033	1	1	44	100	137,009	615,181	110,251,388	231,768,982

Louisiana

Field—	Completions 1926	Completions 1925	Producers 1926	Producers 1925	Gas Wells 1926	Gas Wells 1925	Failures 1926	Failures 1925	Initial Production 1926	Initial Production 1925	Annual Production 1926	Annual Production 1925
Bellevue	13	24	7	14	2	3	4	7	368	290	438,387	1,191,373
Caddo	103	81	80	60	13	9	10	12	4,730	4,466	2,099,142	4,173,837
Cotton Valley	22	131	16	117	2	8	4	6	835	17,285	1,457,930	3,520,357
De Soto-Red River	2	1	2	1	..	..	..	..	25	110	689,367	.....
Edgerly	7	6	7	3	..	1	..	2	1,820	855	169,185	194,769
Elm Grove	.....	.....	.....	.....	.....	.....	..	5	55	90	92,425	244,011
Evangeline	19	30	14	24	..	..	5	6	1,527	4,611	207,125	349,319
Haynesville	..	..	..	..	..	..	..	..	....	....	1,904,195	4,739,110
Homer	5	1	5	1	..	..	..	..	88	40	1,047,950	2,399,979
Lockport	11	20	9	7	..	..	2	13	19,700	9,470	589,290	477,504
Monroe	26	31	..	1	26	26	..	4	...	36	.....	.....
Urania	177	11	150	9	1	..	26	2	28,935	805	943,847	18,670
Vinton	30	70	22	50	..	..	8	20	6,056	27,525	1,182,070	2,535,979
Others	3	..	1	..	2	..	..	..	25	...	75,400	.....
Wildcats	36	111	..	4	..	..	36	107	...	...	.....	3,509
Totals	456	530	315	294	46	52	95	184	64,164	65,583	10,896,313	19,848,417

Arkansas

Field—	Completions 1926	Completions 1925	Producers 1926	Producers 1925	Gas Wells 1926	Gas Wells 1925	Failures 1926	Failures 1925	Initial Production 1926	Initial Production 1925	Annual Production 1926	Annual Production 1925
Bradley	3	1	2	1	..	..	1	..	225	12	.....	.....
El Dorado	21	9	5	5	3	..	13	4	280	285	1,377,967	3,198,905
Irma-Nevada	25	17	21	15	2	..	2	2	2,620	1,720	412,387	514,072
Lisbon	182	..	168	..	1	..	13	..	27,073	.....	869,765	.....
Smackover	309	1,631	212	1,323	42	107	55	201	22,842	1,382,003	28,383,937	74,383,376
Stephens	22	11	19	10	2	1	1	..	1,299	135	335,895	621,347
Wildcats	34	102	..	..	..	..	34	102	....	.....	.....	.....
Totals	586	1,771	427	1,354	50	108	119	309	54,339	1,384,155	31,389,951	78,717,700

It Leads the List—

The OIL WEEKLY not only has more oil producer subscribers in Texas than all other oil journals combined, but it has more oil producer subscribers in the United States and the remainder of the world than any two oil journals combined.

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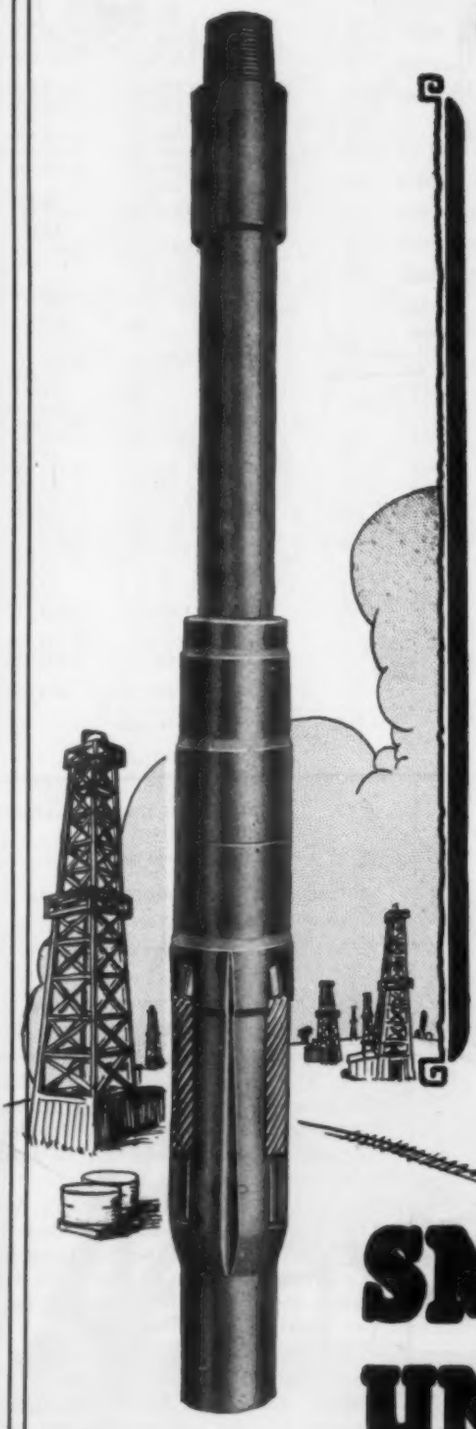
Underreaming at it's BEST!



No, underreaming has not always been clean-cut, nor speedy. But now, speed and clean-cut work go perfectly together. Big operators demanded it, and Smith filled the order.

When a Smith Rotary Underreamer is put to work operators express surprise at its speed, often predicting a balled-up hole. But when the crew "runs in" the liner, clean to the bottom without a single drawback, their doubts vanish. The evidence of clean-cut work and speed cannot be refuted.

Sturdy simplicity and scientific design could not be more competently combined than shown by the Smith Underreamer. For full details, see the new folder, sent on request.

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All Supply Houses

The **SMITH ROTARY UNDERREAMER**

Texas

Field—	Completions 1926	Completions 1925	Producers 1926	Producers 1925	Gas Wells 1926	Gas Wells 1925	Failures 1926	Failures 1925	Initial Prod. 1926	Initial Prod. 1925	Annual Prod. 1926	Annual Prod. 1925
Archer County	832	1,505	478	930	..	..	354	575	30,100	90,912	5,628,325	13,578,085
Barbers Hill	1	..	1	..	..	..	..	..	600	.....	*	46,712
Batson	40	58	31	47	..	1	9	10	2,216	11,210	212,982	545,567
Baylor County	22	28	6	14	..	..	16	14	163	715	*	44,420
Big Creek	6	36	3	10	..	1	3	25	1,225	6,415	196,802	329,096
Blue Ridge	6	10	5	6	..	..	1	4	1,475	10,325	145,775	302,607
Boling	45	2	25	1	..	..	20	1	30,830	10,000	724,047	10,500
Brown County	300	149	182	105	7	..	111	44	26,504	8,355	*	760,285
Big Lake	38	80	32	64	1	..	5	16	29,590	99,853	5,798,670	8,981,545
Burkburnett	77	132	48	89	..	..	29	43	646	8,637	2,239,917	5,206,550
Callahan	44	101	15	73	1	..	28	28	1,877	8,820	744,927	1,285,215
Coleman	64	18	17	11	5	..	42	7	3,095	148	*	60,199
Corsicana-Powell	4	170	2	138	1	..	1	32	1,500	9,011	5,751,925	17,582,055
Crockett	14	1	11	1	1	..	2	..	1,705	25	*	3,320
Currie	2	9	1	3	..	..	1	6	90	1,880	189,620	481,975
Damon Mound	..	..	..	..	..	..	..	..	.....	.....	170,382	419,011
Dayton	..	..	..	..	..	..	..	..	.....	.....	*	6,508
Desdemona	..	..	..	..	..	..	..	..	.....	.....	385,682	.....
Eastland	76	164	24	96	12	..	40	68	1,307	5,054	1,077,957	3,710,990
Electra	213	380	123	249	..	..	90	131	4,624	10,509	2,873,362	6,294,455
Goose Creek	27	79	20	61	..	3	7	15	3,973	14,732	1,602,230	3,661,098
High Island	9	11	1	4	..	..	8	7	35	2,300	*	*
Hull	81	175	72	154	..	4	9	17	53,651	121,970	3,135,180	7,183,796
Humble	3	..	3	..	..	..	..	..	4,650	.....	795,515	1,751,720
Jack County	14	..	3	..	..	..	11	..	135	.....	*	8,755
K-M-A and Iowa Park	71	217	27	129	..	..	44	88	701	9,443	1,032,767	1,742,690
Luling	5	14	5	14	..	..	..	..	7,500	2,541	4,099,860	9,706,346
Lytton Springs	..	181	..	172	..	1	..	8	.....	79,862	1,245,635	2,570,709
Marion	11	5	9	3	..	2	2	..	319	370	.....	.....
Markham	..	..	..	..	..	..	..	..	.....	.....	.....	34,336
Mexia	3	5	3	1	..	3	..	1	160	200	2,420,175	7,087,615
Mitchell County	19	36	17	33	..	..	2	3	1,155	3,590	*	798,895
Mirando	86	81	54	71	21	10	11	..	44,010	15,215	1,311,125	3,487,618
Montague County	78	49	69	34	3	..	6	15	5,428	1,581	*	111,265
Nash	9	..	4	..	1	..	4	..	1,350	.....	*	.....
Orange	53	120	38	95	..	5	15	20	27,445	72,417	2,304,117	5,023,620
Orchard	2	..	2	..	..	..	..	..	2,500	.....	*	.....
Palo Pinto County	13	28	1	7	2	..	10	21	200	417	78,865	228,000
Panola County	4	27	1	1	1	23	2	3	12	20	.....	.....
Panhandle	126	59	103	51	7	..	16	8	75,230	10,085	2,382,190	1,240,375
Petrolia-Clay County	28	36	9	12	1	..	18	24	235	430	79,475	147,680
Piedras Pintas	..	1	..	1	..	..	..	..	.....	1,500	75,382	17,000
Pierce Junction	10	15	9	7	..	..	1	8	4,090	8,755	256,255	292,356
Richland	2	28	..	15	..	1	2	12	.....	1,495	375,047	2,037,095
Saratoga	9	31	5	19	..	..	4	12	180	1,628	217,605	587,507
Scurry County	1	2	1	2	..	..	..	..	20	55	*	19,000
Sour Lake	30	53	26	40	..	..	4	13	6,713	3,032	791,577	1,585,054
South Liberty	5	196	3	158	..	..	2	38	1,858	130,324	1,190,757	4,551,290
South Vernon	222	304	174	247	3	..	45	57	22,752	49,603	2,257,757	3,189,720
Spindletop	37	47	27	32	..	..	10	15	20,843	2,683	677,410	428,873
Somerset	..	..	..	..	..	..	..	..	.....	.....	425,497	1,115,626
Stephens County	97	213	53	121	17	..	27	92	8,295	33,767	2,351,060	5,729,035
Thrall	..	..	..	..	..	..	..	..	.....	.....	*	16,935
Throckmorton County	4	4	2	1	..	..	2	3	585	153	*	44,355
Upton County	12	..	11	..	..	..	1	..	523	.....	*	.....
West Columbia	8	26	4	14	..	1	4	11	160	406	1,659,732	4,239,115
Waskom	6	70	1	..	5	64	..	6	10	.....	.....	.....
Wortham	3	429	..	338	2	..	1	91	.....	413,685	1,916,615	16,838,150
Young	240	575	116	299	..	..	124	276	6,527	46,310	1,441,235	3,432,320
Wildcats	180	489	21	70	3	5	156	414	12,805	17,677	*	*
Miscellaneous	11	11	10	9	1	2	..	..	1,521	2,725	2,227,584	288,685
Totals	3,303	6,449	1,283	4,043	95	124	1,925	2,282	453,118	1,330,840	62,490,928	150,027,406

*Production listed under miscellaneous.

Kansas

Field—	Completions 1926	Completions 1925	Producers 1926	Producers 1925	Gas Wells 1926	Gas Wells 1925	Failures 1926	Failures 1925	Initial Prod. 1926	Initial Prod. 1925
Barton	2	2	..	..	..	..	2	2	.....	.....
Butler	164	130	103	64	1	1	60	65	13,305	5,884
Chase	17	14	1	8	..	..	16	6	60	1,155
Chautauqua	11	30	6	9	1	5	4	16	102	858
Clark	1	..	..	..	..	..	1	..	....	.....
Clay	2	1	..	..	..	..	2	1	....	.....
Coffey	9	9	..	5	..	..	9	4	....	90
Cowley	93	313	53	206	5	13	35	94	6,245	91,090
Elk	66	120	29	60	13	23	24	37	1,460	3,562
Ellis	2	1	..	..	..	..	2	1	....	.....
Greenwood	392	668	279	472	2	4	111	192	41,074	72,568
Harvey	3	5	..	..	..	..	3	5	....	.....
Kingman	2	1	..	..	..	..	2	1	....	.....
La Bette	1	..	..	..	..	..	1	..	....	.....
Lyon	73	20	30	9	..	..	43	11	5,005	535
Marion	11	16	2	5	1	1	8	10	130	484
Montgomery	10	34	1	5	2	1	7	28	25	655
Osage	1	1	..	..	..	..	1	1	....	.....
Phillips	1	1	..	..	..	..	1	1	....	.....
Rice	5	2	4	1	..	..	1	1	455	210
Russell	29	53	26	43	..	1	3	9	4,302	9,806
Sedgwick	2	9	..	..	..	..	2	9	....	.....
Stafford	1	..	..	..	..	..	1	..	....	.....
Sumner	11	33	3	7	..	1	8	25	710	726
Trego	2	2	..	..	..	..	2	2	....	.....
Wabaunsee	1	..	..	..	..	..	1	..	....	.....
Wilson	3	13	..	..	1	1	2	12	....	.....
Woodson	13	45	5	22	..	1	8	22	1,255	545
Totals	928	1523	542	916	26	52	360	55	74,128	188,163

(Continued on page 158)

Few Larger Companies Producing Most of Oil in Texas

(Continued from page 49.)

has not kept its production up to 200,000 barrels per quarter.

Field booms always bring a few small companies and independents into prominence but these operators drop from the scene as the field goes down, or as they are absorbed by larger outfits. Such a company was the Lewis Oil Company, with big production at the time Mexia was being developed, but not shown on the list of leading companies since that time.

The Grayburg Oil Company had a big boost in its production when Luling was brought in, this company holding one good lease in that field. Grayburg's yield was above 200,000 barrels per quarter for all of 1925.

During 1921 and 1922, Sinclair Oil and Gas Company was showing an output close to 300,000 barrels per quarter, but the company has not pushed its operations for about two years.

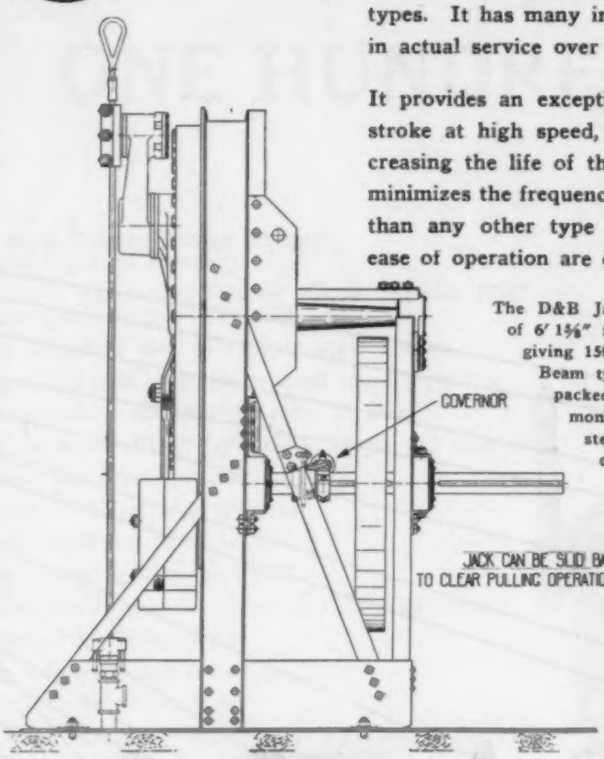
Kirby Petroleum Company has gone above 200,000 barrels five times during the five years. These production spurts have been spasmodic, however, and

The new long stroke pumping action of the D&B Simplex Pumping Jack stops high speed troubles and increases production.

THE NEW D-B SIMPLEX PUMPING JACK

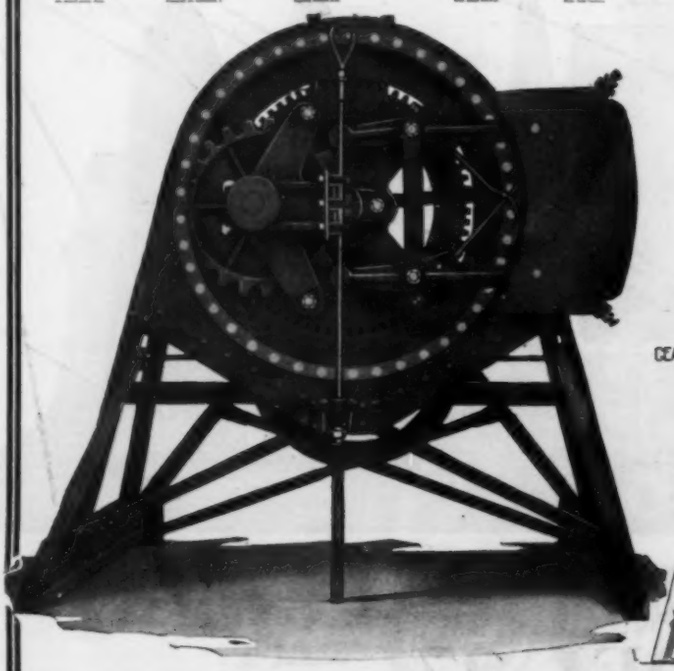
This new, perfected D&B Pumping Jack is a big improvement over ordinary types. It has many improvements which are entirely new, but proved practical in actual service over a long period of time.

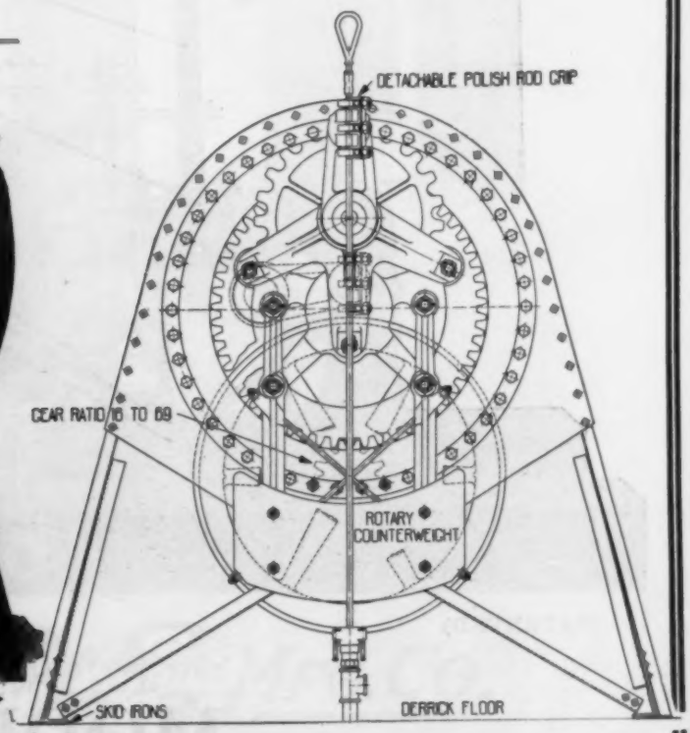
It provides an exceptionally easy, smooth motion to the sucker-rods on long stroke at high speed, materially reducing the whipping and vibration and increasing the life of the rods. It increases production when the fluid is there, minimizes the frequency and cost of pulling jobs, and operates more economically than any other type of jack yet developed. Its greater plunger travel and ease of operation are decided improvements of inestimable value.



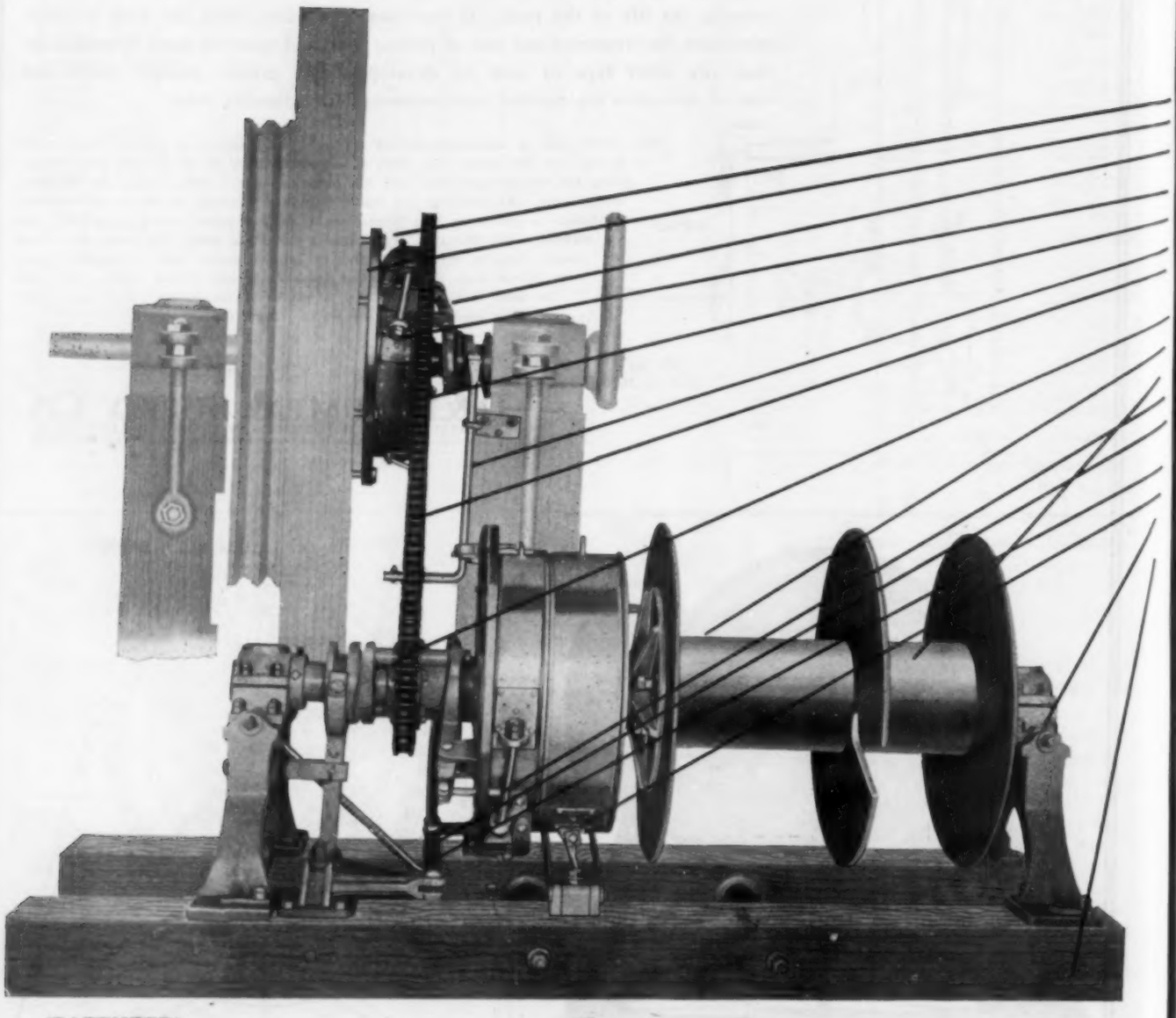
The D&B Jack is approximately 10′ 6″ high and provides a straight line travel of 6′ 1⅝″ for the polish rod, with a maximum speed of 25 strokes per minute, giving 150′ of plunger travel per minute as compared with 75′ for the Walking Beam type. All bearings are heavy duty ball bearings of enormous capacity, packed in grease so that lubrication is only required about once every six months. The frame is of fabricated structural steel; the gears are all of steel. Can be direct connected to electric motor with a reduction gear, or driven from the calf wheel sprocket at any desired speed. Also can be used in connection with a gas or steam engine. Our new folder fully describes and illustrates. Send for a copy.

D&B PUMP & SUPPLY CO.
301 WEST AVENUE 26 LOS ANGELES, CALIF. ~ DALLAS, TEXAS
BRANCH STORES: OSALINDA, BAKERSFIELD, TAFT, TORRANCE, SIGNAL HILL & SANTA FE SPRINGS, CALIF.





THE IMPROVED



(PATENTED)

MODEL 27

Say you saw it in The OIL WEEKLY

S.&B. Chain Driven Sand Reel

MODEL 27

Fits Any Rig Without Alteration

ONE HUNDRED LESS PARTS

Two Piece Driving Flange fits over Regular Rig Iron Flange.

Two Piece Bandwheel Friction Clutch requires 10½" of Shaft space, entirely removable.

Single Adjusting Bolt to compensate for wear.

Flange Keys may be driven without removing parts.

All breakable Brackets and Levers of Steel.

Diamond Roller Chain for silence, speed and strength.

Machine Cut Steel Sprocket.

Capacity 7,000 feet of 9/16" Line.

Capacity 3,500 feet 9/16" Line.

Single Adjusting Bolt for Clutch.

Single Control Lever for operating Clutch and Brake.

Connection for Safety Line.

Single Adjusting Bolt for Brake.

Heavy Adjustable Bearings.

Oak Sills, Resilient, Universally Applicable, Portable—Steel Optional.

At Supply Stores Everywhere

POPULARITY

The popularity of the improved S. & B. Chain Driven Sand Reel has spread throughout the oil industry almost over night.

Its simplified design . . . its greater efficiency . . . sturdy construction . . . adaptability to any rig without alteration . . . have won instant favor with the oil fraternity.

It has all the advantages of other types with many features not found on any other sand reel.

Write for illustrated bulletin

Manufactured by

THE OIL COUNTRY SPECIALTIES MFG. CO.

COFFEYVILLE, KANSAS

Say you saw it in The OIL WEEKLY

Kansas

(Continued from page 154)

Kansas production by fields for first six months of 1926 as compared with totals for 1925:

Field—	1926	1925
Florence-Covert	318,489	747,784
Peabody-Ebling	798,661	2,146,247
El Dorado-Towanda	2,535,845	5,257,313
Augusta-Fox Bush	879,112	2,054,643
Rainbow Bend	900,203	4,591,494
Russell	993,546	193,967
Greenwood County	7,140,759	9,129,190
Miscellaneous	5,088,383	10,377,118
Totals	18,654,998	34,497,756

Mountain States

COLORADO

	Completions		Producers		Gas Wells		Failures		Init. Prod.	
	6 Mo.	Total	6 Mo.	Total	6 Mo.	Total	6 Mo.	Total	6 Mo.	Total
Field—	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925
Beaver Creek		1	...	...	...	...	...	1	.....	.....
Berthoud		1	...	...	...	...	...	1	.....	.....
El Paso County	1	...	...	...	...	...	1	...	.....	.....
Florence		5	...	4	...	...	...	5	.....	215
Fort Collins	1	2	...	2	...	...	1	...	.....	650
Freemont		1	...	1	...	...	...	...	.....	25
Iles	1	4	1	1	...	...	...	3	50	576
Kiowa County	1	...	...	...	...	...	1	...	.....	.....
Lafayette		1	...	...	...	...	...	1	.....	.....
La Plata County	1	1	...	...	...	...	1	1	.....	.....
Larimer County	1	...	...	...	...	...	1	...	.....	.....
Mancos		1	...	...	...	...	...	1	.....	.....
Mesa County	1	1	...	...	...	...	1	1	.....	.....
Moffatt Dome	2	2	2	1	...	...	...	1	4,650	1,000
Rio Blanco Co.		1	...	...	...	...	...	1	.....	.....
Sage Cr'k Dome		1	...	...	...	...	...	1	.....	.....
San Juan		1	...	1	...	...	...	...	.....	50
Slater Dome		1	...	...	...	...	...	1	.....	.....
Thornburg Dome		2	...	...	...	...	...	2	.....	.....
Tow Creek	1	...	...	...	...	...	1	...	.....	.....
Wellington	3	5	...	3	...	...	3	2	.....	2,000
Yuma		2	...	...	...	...	...	2	.....	.....
Miscellaneous		2	...	1	...	...	...	1	.....	100
Total	13	35	3	14	...	...	10	21	4,700	4,616

MONTANA

	Completions		Producers		Gas Wells		Failures		Init. Prod.	
	6 Mo.	Total	6 Mo.	Total	6 Mo.	Total	6 Mo.	Total	6 Mo.	Total
Field—	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925
Beaver Creek		1	...	...	...	...	...	1	.....	.....
Big Lake	1	3	...	1	...	1	1	1	.....	200
Big Otter Creek		1	...	...	...	...	...	1	.....	.....
Cat Creek	1	11	1	11	...	...	...	...	65	388
Crow Reservat'n	1	...	...	...	...	...	1	...	.....	.....
Devil's Creek		1	...	1	...	...	...	...	.....	75
Havre	1	...	...	...	1	...	...	...	.....	.....
Lake Basin	1	...	1	...	...	...	...	...	250	.....
Kevin-Sunburst	93	247	75	208	6	8	12	31	48,255	78,670
Shawmut		1	...	...	...	...	...	1	.....	.....
Springdale		1	...	...	...	...	...	1	.....	.....
Miscellaneous		1	...	1	...	...	...	...	.....	50
Total	98	267	77	222	7	9	14	36	48,570	79,838

NEW MEXICO

	Completions		Producers		Gas Wells		Failures		Init. Prod.	
	6 Mo.	Total	6 Mo.	Total	6 Mo.	Total	6 Mo.	Total	6 Mo.	Total
Field—	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925
Artesia	12	32	12	32	...	...	...	...	950	8,095
Bloomfield Mesa		3	...	3	...	...	...	...	.....	88
Chaves	4	...	...	...	...	...	4	...	.....	.....
Eddy County	43	13	37	11	...	1	6	1	2,730	2,915
Hogback		1	...	1	...	...	...	...	.....	1,135
McKinley Co.	1	...	...	...	...	...	1	...	.....	.....
Quay County	1	...	...	...	...	...	1	...	.....	.....
Rattlesnake	3	5	3	5	...	...	...	...	460	2,280
San Juan Co.		2	...	1	...	...	...	1	.....	50
Table Mesa	1	2	1	2	...	...	...	...	175	825
Wildcats	3	...	...	...	...	...	3	...	.....	.....
Total	68	58	53	55	...	1	15	2	4,315	15,388

UTAH

	Completions		Producers		Gas Wells		Failures		Init. Prod.	
	6 Mo.	Total	6 Mo.	Total	6 Mo.	Total	6 Mo.	Total	6 Mo.	Total
Field—	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925
Clay Basin		1	...	...	...	...	...	1	.....	.....
San Juan County	1	...	1	...	...	...	...	...	1,200	.....
Total	1	1	1	...	...	...	...	1	1,200	.....

NEBRASKA

	Completions		Producers		Gas Wells		Failures		Init. Prod.	
	6 Mo.	Total	6 Mo.	Total	6 Mo.	Total	6 Mo.	Total	6 Mo.	Total
Field—	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925
Chadron	1	...	...	...	...	...	1	...	.....	.....
Total	1	...	...	...	...	...	1	...	.....	.....

with considerable time between them. The company's yield has been declining since the first quarter of 1925.

Mid-Kansas was active in Texas in 1922 and 1923, but has not maintained big production since that time.

During the last half of 1923 and the first half of 1924, Roxana Petroleum Company showed sufficient production to be listed among leading companies.

Smaller Producers

Yount-Lee Oil Company, exclusively a coastal operator, had production ranging around a half million barrels beginning with the second quarter of 1922 and going through the first quarter of 1923. A slump followed and the company has not gone above 200,000 barrels per quarter since. Recently however, Yount-Lee has added a good deal of new production from deep sands at Spindletop, and the next quarter will show a good gain for this company.

Rio Bravo Oil Company, producing subsidiary of the Southern Pacific, with holdings scattered over south and central Texas, went above 200,000 barrels during the last quarter of 1924 and has kept its output above this level.

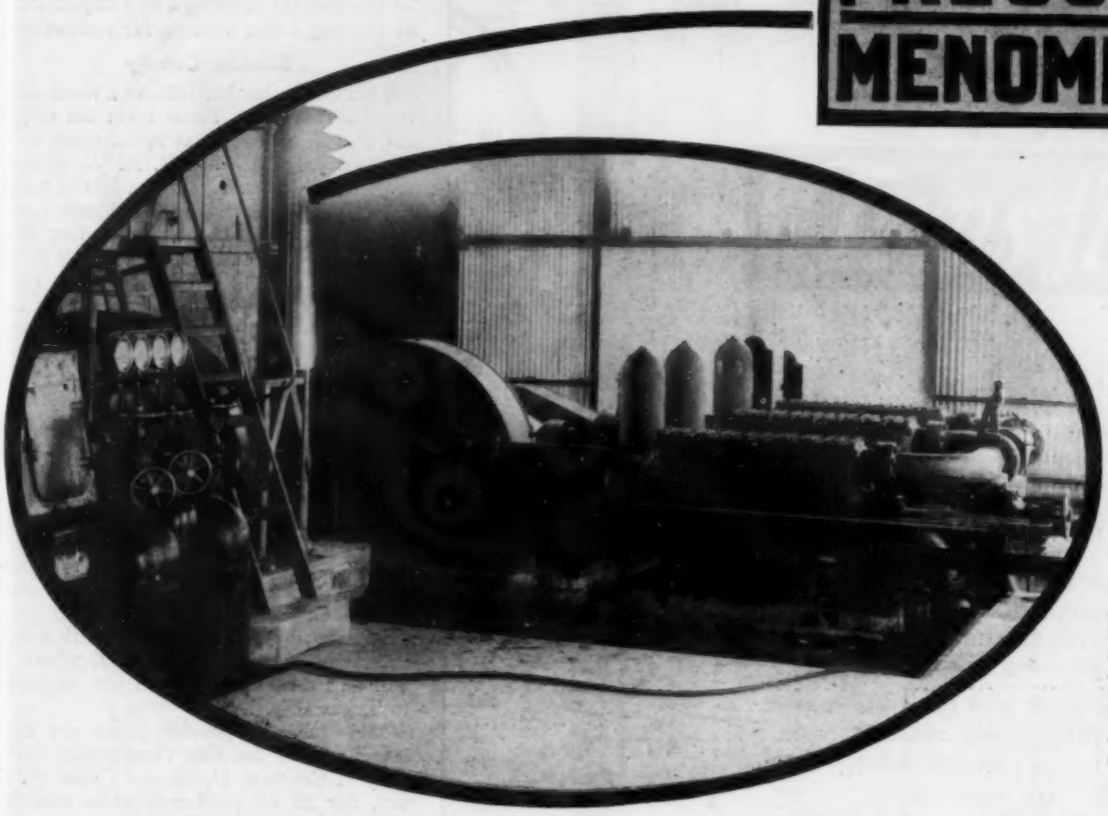
Monarch Oil and Refining Company, Panhandle Refining Company, and E. L. Smith have each shown production above 200,000 barrels for different quarters during the five years, but these quarters have been few and far between.

An interesting fact about the table of companies with production of more than 200,000 barrels per quarter, is the tendency of the number of companies to strike an average. Offhand one might think that the past two or three years would show many more such companies than 1921 or 1922. Such a conclusion is not borne out, for the table shows there are an average of about two such companies added to the list each year.

At the beginning of 1921 there were 13 companies with production above 200,000 barrels per quarter. At the close of the year this number had increased to 15. There were 16 such companies reporting for the first quarter of 1922, and 18 for the last quarter. The next year showed 16 companies for the first quarter and 17 for the last. There was a decrease of two for the first quarter of 1924, but two were gained in the last quarter of that year, giving 1923 and 1924 the same during the last quarter. Last year the first quarter showed 19 such compaies, but at the end of the year one of these had dropped out.

Thus there was an increase of only six companies over the five year period. This tendency of the number to remain steady is probably accounted for by the steady process of consolidation among companies. The past six months have brought many mergers, several of which have been in Texas, cutting down the number of companies to appear with better than 200,000 barrels on the next Texas quarterly production report.

PRESCOTT
MENOMINEE



A 25,000 barrel unit with Sigeron Metal fluid end installed with Diesel engine drive in the Humble Pipe Line Company's station at Chilton, Texas.

Used by the Leaders

A catalog of users of Prescott-Menominee pumps reads like a rating list of the leaders in the oil industry. These leaders in the industry want certain things in their equipment for pumping service, and they have the world to choose from. It is significant that Prescott-Menominee pumps are the choice.

This choice is but natural, however, for Prescott-Menominee field pumps and main line pumps are specialized products designed for this class of service. They have been built to meet the particularly severe conditions in the oil fields, and to do it easily. Ample margins of safety are provided; they take high pressures, overloads, the heavy work of continuous running, and they keep on smoothly, quietly, and with surprising economy.

If you want these features in your pumping service, our engineers can help you get them. Find out why the leaders use Prescott-Menominee pumps.

THE PRESCOTT COMPANY

Menominee, Michigan

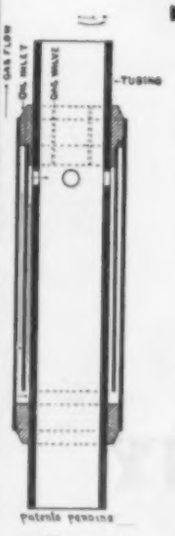
Say you saw it in The OIL WEEKLY

Mountain States

WYOMING

Field—	Completions 6 Mo. 1926	Completions Total 1925	Producers 6 Mo. 1926	Producers Total 1925	Gas Wells 6 Mo. 1926	Gas Wells Total 1925	Failures 6 Mo. 1926	Failures Total 1925	Init. Prod. 6 Mo. 1926	Init. Prod. Total 1925
Allen Lake	1	...	...	...	...	...	1	...	.....	.....
Arminto	1	...	...	...	...	...	1	...	.....	.....
Baxter Baisin	...	1	...	...	...	...	...	1	.....	.....
Bell Springs	1	1	...	...	...	...	1	1	.....	.....
Big Horn Basin	...	...	...	...	...	...	...	...	.....	.....
Big Muddy	1	4	1	4	...	...	...	...	100	140
Billy Creek	...	1	...	...	...	...	...	1	.....	.....
Black Mountain	2	2	2	2	...	...	...	...	650	800
Buffalo Anticline	...	1	...	...	...	...	...	1	.....	.....
Buffalo Basin	...	1	...	...	...	...	...	1	.....	.....
Carbon County	...	...	...	...	...	...	...	...	.....	.....
Dry Piney	...	1	...	...	...	...	...	1	.....	.....
Dugout Creek	...	1	...	...	...	...	...	1	.....	.....
Eight Mile Lake	...	1	...	...	...	...	...	1	.....	.....
Elk Basin	...	...	...	...	...	...	...	...	.....	.....
Enos Creek	...	1	...	...	...	...	...	1	.....	.....
Ferris	...	1	...	...	...	1	...	...	.....	.....
Foote Anticline	...	1	...	...	...	...	...	1	.....	.....
Freemont Co.	...	...	...	...	...	...	...	...	.....	.....
Garland	...	1	...	...	...	...	...	1	.....	.....
Gebo	1	...	...	...	...	...	1	...	.....	.....
Grass Creek	2	4	2	3	...	...	...	1	.....	150
Hamilton Dome	...	1	...	1	...	...	...	...	.....	106
Horse Creek	...	1	...	...	...	...	...	1	.....	.....
La Barge	1	...	...	...	...	...	1	...	.....	.....
Lance Creek	...	2	...	1	...	...	...	1	.....	1,100
Lost Soldier	4	14	3	8	...	1	1	5	825	2,620
Lovell	1	...	...	...	...	...	1	...	.....	.....
Mahoney	2	6	...	...	1	4	1	2	.....	.....
Mellen Dome	1	...	...	...	...	...	1	...	.....	.....
Natrona County	...	...	...	...	...	...	...	...	.....	.....
North Casper Creek	...	1	...	...	...	...	...	1	.....	.....
North Riverton	...	1	...	...	...	...	...	1	.....	.....
Notches Dome	...	1	...	...	...	1	...	...	.....	.....
Oregon	...	2	...	...	...	1	...	1	.....	.....
Osage	...	1	...	1	...	...	...	...	.....	.....
Pilot Butte	2	1	...	...	1	...	1	1	.....	.....
Pine Mountain	2	...	...	...	1	...	1	...	.....	.....
Poison Spider	1	2	1	2	...	...	...	...	200	700
Powder River	1	...	...	...	...	...	1	...	.....	.....
Rawhide Creek	1	...	...	...	...	...	1	...	.....	.....
Rex Lake Field	1	2	...	1	...	...	1	1	.....	100
Rock River	1	2	...	2	...	...	1	...	.....	235
Sage Creek	...	3	...	...	...	...	...	3	.....	.....
Salt Creek	161	434	159	425	...	2	2	7	64,141	55,459
Sherard Dome	...	1	...	...	...	...	...	1	.....	.....
Simpson Ridge	...	6	...	4	...	...	...	2	.....	.....
Sugar Creek	1	1	...	...	...	...	1	1	.....	.....
Steel Creek	...	1	...	...	...	...	...	1	.....	.....
St. Mary's	...	1	...	...	...	...	...	1	.....	.....
Teapot Dome	...	...	...	...	...	...	...	...	.....	.....
Tisdale Dome	...	1	...	...	...	...	...	1	.....	.....
Warm Springs	1	...	1	...	...	...	...	...	200	.....
Wertz	...	...	...	...	...	...	...	...	.....	.....
West Salt Creek	1	...	...	...	1	...	...	...	.....	.....
Willow Creek	1	...	...	...	...	...	1	...	.....	.....
Wildcats	4	...	1	...	...	...	3	...	.....	.....
Totals	196	508	170	455	4	10	22	43	66,116	62,055

Sumrick Gas Anchor



—separates the gas from the oil at the bottom of the well. - - -

ADVANTAGES:

—Pumps a steady stream of oil.
—Lubricates the sucker rods.
—Prevents emulsion of the oil.
—Extends the life of the cups.
—Increases production due to a continuous flow of oil.

Manufactured by

OIL WELL SPECIALTIES CO.

Patent Pending

1022 Santa Fe Ave. **Los Angeles, Calif.**

Enough Oil Land in West Texas to Keep Drills Busy Many Years

(Continued on page 147.)

be the nearest approach to a duplication of the Big Lake field so far uncovered.

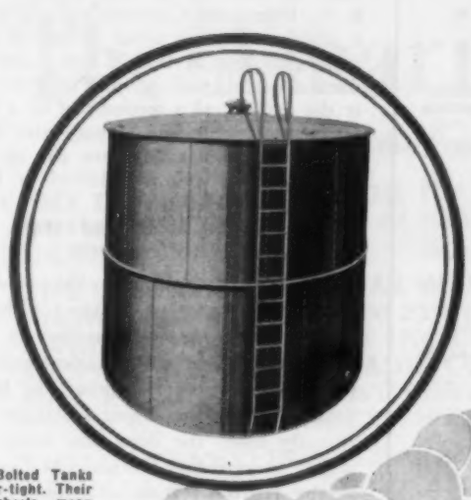
Winkler County

That oil production follows a northwest trend across West Texas from the original Hurdle district was again made evident on July 16, when R. A. Westbrook & Co.'s wildcat test near the inland town of Kermit began flowing by heads from an oil pay formation at 2500-25 feet that has not been identified. This well is in Winkler County, which is without railroad facilities, and is the wildest of all discoveries made to date. A good producer is virtually assured, although the well is yet in an incomplete stage. Although this well is located 25 miles from Monahan, the nearest railroad point, and several hundred miles from the nearest pipe line system, the owners will receive Mid-Continent gravity prices at the well for all produced, according to a contract made with the Kay County Gas Company, Marland crude buying subsidiary. However, the owners must provide two 500-barrels tanks. The Marland Pipe Line Company will connect the well with a line and pump the oil to Monahan, where it will be loaded in tank cars for shipment to Texas City.

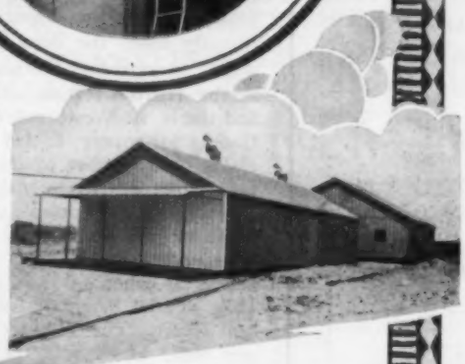
Mid-Continent gravity prices are also being paid by the Kay County Gas Company in Crockett, Upton and Crane counties, for all oil produced, while Humble Pipe Line Company is becoming a contender for crude in the three counties on the same basis, thereby giving West Texas operators a ready market for all oil produced and at prices that prevail in the older sections of the Mid-Continent. Tank cars are being used to move the Kay County Gas Company's crude purchases to distant markets while Humble is storing crude as a preliminary step for a pipe line extension from the Big Lake field in Reagan County. The Texas Company is likewise making preparations to enter the Hurdle district with a local gathering system and will erect a 15-car rack at Crossett located on the Orient Railroad.

The Magnolia Petroleum Company uncovered oil production in the southwest part of Mitchell County in the so-called Iatan district, in August, 1925, with a 150-barrel pumper from dolomitic lime pay at 2858-72 feet, and two additional pumpers have been completed on offset locations by Magnolia. The first commercial production in Howard County was scored in November, 1925, when Fred Hyer et al's Clay 1 established the first shallow pool in West Texas with an initial production of 50 barrels at 1542-62 feet. Since this discovery a more prolific pool has been located a few miles to the northwest by Owen-Sloan Oil Company's Otis Chalk 1, which flowed 70 barrels initial at 1578-83 feet. Kay County Gas Company was the first to enter this shallow area to purchase oil, and is paying Mid-Continent gravity prices, while Magnolia is also entering with a local gathering system to buy oil and run its own production.

Loving County has the deepest pro-



Butler Bolted Tanks are vapor-tight. Their larger sheets mean fewer seams and fewer leaks.



This Butler READY-MADE Steel Building is used as a power house.

For large carbon black plants Butler Buildings are excellent.

Butler Welded Flow Tanks are more durable and reliable.

In Texas fields

At ONE time there were in the Big Lake Fields FIFTY-FOUR 1,000-barrel Butler Bolted Tanks in a row—nearly one quarter of a mile long! In the largest fields and elsewhere Butler Tanks and Steel Buildings are seen.

Whether you need bolted tanks or welded tanks, steel buildings for engines, natural gasoline production or a large carbon black plant, etc., Butler can take good care of you.

Near every good field there are Butler dealers ready to serve you speedily. They are reliable. See list below.

Butler Mfg. Co.

Kansas City, Mo. Minneapolis, Minn.

Foreign Dept.: Room 903, 44 Whitehall St., New York, N. Y.

Butler reliable dealers are:

M. & V. Tank Company, at Wichita Falls, Vernon, Olney, Nocona, Panhandle, Cross Plains and Amarillo, Texas.

Drane-Humphrey Company, at San Angelo, Big Lake and McCamey, Texas; and Carlsbad, New Mexico.

Drane Tank Company, at Tulsa and Holdenville, Oklahoma; Eldorado and Madison, Kansas.

M. A. Trimmer, at Blackwell, Oklahoma.

Southern Steel Co., at San Antonio and Mirando City, Texas.

D. H. Greenwood, 716 Transportation Bldg., Los Angeles, California.

Los Angeles Manufacturing Company, Los Angeles, California.

Petroleum Specialties Co., at Casper, Wyoming.

Thomas Moran, at Oil City, Shreveport and Georgetown, Louisiana.

Continental Supply Co., at Kevin, Montana.

G. J. Gillespie, 32 Fenchurch St., London, E. C. 3, England.

TRADE STEEL BUTLER PRODUCTS MARK

Oklahoma

County—	Six Mo. Completions 1926	Total 1925	Six Mo. Producers 1926	Total 1925	Six Mo. Gas Wells 1926	Total 1925	Six Mo. Failures 1926	Total 1925	Six Mo. Initial 1926	Total Production 1925
Alfalfa	1	3	....	....	....	....	1	3	.....	.....
Atoka	1	2	....	....	....	....	1	2	.....	.....
Beckham	1	5	....	1	....	....	1	4	.....	15
Bryan	..	1	....	....	....	....	....	1	.....	.....
Burbank	103	....	98	....	....	....	....	5	.....	33,421
Caddo	8	7	6	4	....	....	3	3	355	155
Carter	117	213	87	151	11	5	19	57	10,945	15,706
Cleveland	..	1	....	....	....	....	....	1	.....	.....
Comanche	30	10	13	4	....	....	17	6	327	148
Cole	1	....	....	....	....	....	1	....	.....	.....
Cotton	2	12	....	....	....	2	2	10	.....	.....
Craig	..	1	....	....	....	....	....	1	.....	.....
Creek	331	469	205	262	28	46	98	159	30,076	45,187
Custer	..	1	....	....	....	....	....	1	.....	.....
Dewey	..	1	....	....	....	....	....	1	.....	.....
Ellis	..	1	....	....	....	....	....	1	.....	.....
Garfield	96	153	73	126	1	3	22	24	122,626	128,578
Garvin	25	26	13	17	4	....	8	9	1,508	2,628
Grady	68	49	13	2	38	30	17	17	1,126	55
Grant	5	9	1	2	....	2	4	5	100	75
Greer	..	4	....	....	....	....	....	4	.....	.....
Haskell	..	4	....	....	....	....	....	4	.....	.....
Hughes	72	264	35	139	3	38	34	87	21,127	60,507
Jackson	1	2	....	....	....	....	1	2	.....	.....
Jefferson	52	46	37	26	1	2	14	18	7,635	7,317
Johnston	..	1	....	1	....	....	....	....	.....	20
Kay	167	286	79	171	15	28	73	87	42,505	169,140
Kiowa	..	3	....	1	....	....	....	2	.....	10
Kingfisher	1	2	....	....	....	....	1	2	.....	.....
Latimer	1	....	....	....	....	....	1	....	.....	.....
Le Fore	1	1	....	....	....	....	1	1	.....	.....
Lincoln	151	115	122	88	1	2	28	2	41,857	39,768
Logan	1	4	....	....	....	....	1	4	.....	.....
Love	3	3	....	....	....	....	3	3	.....	.....
Major	..	1	....	....	....	....	....	1	.....	.....
Marshall	8	5	....	2	....	....	8	3	.....	49
Mayes	..	1	....	....	....	....	....	1	.....	.....
McCurtain	1	....	....	....	....	....	1	....	.....	.....
McIntosh	2	8	....	1	....	2	2	5	.....	75
Muskogee	19	39	5	9	3	4	11	26	128	195
Noble	15	66	3	36	....	6	12	24	110	29,713
Nowata	3	3	2	....	1	....	....	3	23	.....
Okfuskee	100	253	38	123	16	28	46	102	17,135	41,286
Okmulgee	304	512	136	260	47	50	121	202	14,213	42,522
Oklahoma	..	1	....	1	....	....	....	....	.....	70
Osage	347	670	242	433	20	49	85	188	34,705	44,869
Pawnee	116	169	77	96	2	9	37	64	6,063	19,107
Payne	72	46	47	22	16	10	9	14	22,826	6,862
Pittsburg	1	3	....	....	....	....	1	3	.....	.....
Pontotoc	17	18	2	5	5	1	10	12	92	115
Pottawatomie	4	4	1	1	....	....	3	3	23	30
Rogers	2	6	1	3	....	2	1	1	12	110
Seminole	78	332	56	241	3	15	19	76	35,987	111,452
Sequoyah	3	3	....	....	1	....	2	3	.....	.....
Stephens	132	202	47	91	15	36	70	75	2,594	4,500
Tillman	1	5	....	....	....	....	1	5	.....	.....
Tulsa	107	232	39	117	9	28	59	87	2,346	9,133
Wagoner	74	92	21	21	21	14	32	57	497	530
Washita	..	1	....	....	....	....	....	1	.....	.....
Washington	..	4	....	....	....	....	....	4	.....	.....
Woods	..	1	....	....	....	....	....	1	.....	.....
Total	2,542	4,479	1,401	2,557	261	412	880	1,510	416,941	813,348

Oklahoma

Field—	Prod. Six Mo. 1926	Production 1925
North Braman	437,331	2,728,814
South Braman	1,750,478	
Blackwell	662,078	*
Hubbard	353,004	*
Thomas	1,386,500	1,571,596
Otoe	*	2,578,937
Tonkawa	7,028,978	23,249,322
Garber	5,796,850	6,220,930
Burbank	7,512,436	19,742,784
Other Osage	6,177,738	12,684,797
Watchorn	474,095	*
Cushing	4,088,353	8,208,019
Yale-Jennings	2,710,131	*
Davenport	3,183,763	633,485
Bristow-Slick	5,004,000	15,580,131
North Okmulgee	3,275,419	8,499,645
Lyons-Deaner	779,839	
Stroud	516,858	1,296,953
Cromwell	3,437,109	12,096,503
Papoose	2,316,176	7,775,391
Wewoka	4,074,418	4,480,624
Duncan District	1,346,332	478,520
Graham	1,696,315	*
Fox	742,501	*
Hewitt	2,184,231	5,750,493
Healdton	2,708,753	695,775
Other fields	12,523,882	33,678,856
Totals	82,724,192	167,951,575

*Grouped as other fields.

ducer in West Texas from Lockhart and P. V. Petroleum Company's J. J. Wheat 1, which is making about 10 barrels daily from gray lime at 4212-72 feet. The production of this well is being used for fuel in the drilling of a second test on a nearby location. Sterling County also has a lone producer in sandy lime pay at 1173-75 feet. This well was drilled by H. D. Rummel et al on the L. T. Clark ranch, and is swabbing about five barrels daily, but is not operated regularly.

Wildcatters' luck rather than scientific geology has been responsible for the majority of the successful strikes in West Texas, and some of the wildcat tests that were considered off structure by log information on the upper horizons have literally upset the dope and made good wells. Independent Oil and Gas Company in the Hurdle section of Crane County, and the R. A. Westbrook & Co.'s Winkler County discovery fooled the geological staffs of a number of the leading operators in the district by making good wells. Failure of companies to buy acreage when offered during the drilling of the Independent well reacted in the company's favor, as when oil was encountered the bulk of the original drilling block was still intact. The Winkler County discovery well, which was the first test ever drilled in the county, as was the case with the Big Lake discovery in Reagan County, logged the top of the thick salt body at 1930 feet, with a surface elevation of 2806 feet. Getting the salt at this depth caused many of the geologists to disregard it as a potential well when drilling, as most of the wells completed to date have picked up the salt at a much higher sea level datum.

While the top of the salt horizon is being used extensively as a marker in estimating whether a test is running high or low on structure, the big lime, which is the beginning of the lime series, is probably the most accurate marker. The big lime is found to exist at irregular intervals from the sandy lime, or dolomitic lime pay horizon, varying from 30 to 200 feet. The top of the salt and the top of the big lime are watched with great care by operators, and this information is in great demand on all the old tests for use in correlating logs. A complete table covering the elevation, top of the salt, lime and pay level of every oil and gas producing well in West Texas, exclusive of the old settled field in Mitchell and Scurry counties and the Big Lake Field, which was published in the February 26, 1926 issue of *The Oil Weekly*, is carried elsewhere in this issue.

Outside of the Big Lake field, which is averaging 37-38 gravity oil, the bulk of the oil being produced in West Texas averages about 30 gravity, with comparatively little gas pressure accompanying the oil flow. A noticeable sulphur content exists in all of this crude, and may eventually result in a lower price being paid for the oil as compared to Mid-Continent quotations, since refiners experience difficulty in preventing their gasoline from going off color, while the sulphur content is also destructive to refinery equipment.

The Amarillo Gas Company

Serves the People of Amarillo With Natural Gas

THE COMPANY THROUGH ITS AFFILIATIONS, OWNS AND CONTROLS LEASES ON MORE THAN 400,000 ACRES OF PROVEN GAS TERRITORY IN THE PANHANDLE.

THE TWENTY-THREE GAS WELLS OF THE COMPANY HAVE AN AVERAGE OPEN FLOW TEST OF 350,000,000 FEET PER DAY. THE COMPANY HAS TWO LINES TO AMARILLO, ONE EIGHT-INCH AND THE OTHER, A TWELVE-INCH. IMPROVEMENTS ARE BEING MADE CONTINUOUSLY IN ORDER THAT THE COMPANY MAY RENDER THE BEST SERVICE POSSIBLE TO DOMESTIC AND INDUSTRIAL USERS OF ITS PRODUCT.

THE COMPANY INVITES CORRESPONDENCE FROM INDUSTRIES AND INDIVIDUALS INTERESTED IN AMARILLO.

COMPARE THESE RATES

MINERAL WELLS—

First 25,000 cubic feet.....55c net
Next 25,000 cubic feet.....45c net
Next 50,000 cubic feet.....35c net
Next 100,000 cubic feet.....25c net
Next 300,000 cubic feet.....20c net
Over 500,000 cubic feet.....15c net

OKLAHOMA CITY—

First 200,000 cubic feet.....68c net
Over 200,000 cubic feet.....25c net

WICHITA—

58c per thousand cubic feet.
75c service charge.

ABILENE—

67½c per thousand cubic feet, net.

SAN ANTONIO—

First 10,000 cubic feet.....50c net
Next 10,000 cubic feet.....45c net
Next 10,000 cubic feet.....40c net
Next 70,000 cubic feet.....35c net
Next 900,000 cubic feet.....25c net
Next 1,000,000 cubic feet.....19c net

RANGER—

First 100,000 cubic feet 60c
Next 200,000 cubic feet 50c
Over 300,000 cubic feet 17c

CLEBURNE—

67½c per thousand cubic feet, net.

DALLAS—

Over 1,000 cubic feet, 67½c, net.

BARTLESVILLE—

First 1,000 cubic feet..... .....$2
Next 499,000 cubic feet.....45c
Over 500,000 cubic feet.....25c

PONCA CITY—

First 100,000 cubic feet.....55c net
Next 400,000 cubic feet.....45c net
Over 500,000 cubic feet.....25c net

BRECKENRIDGE—

First 30,000 cubic feet.....50c
Next 20,000 cubic feet.....45c
Next 50,000 cubic feet.....40½c
Next 100,000 cubic feet.....35c
Next 200 000 cubic feet.....30c
Next 400,000 cubic feet.....24c
Next 800,000 cubic feet.....15c

Amarillo

First 30,000 cu. feet per mo.
45c per thousand net

Next 170,000 cu. ft. per mo.
22½c per thousand net

Next 6,000,000 cu. ft. per mo.
18c per thousand net

Next 15,000,000 cu. ft. per mo.
15c per thousand net

Next 30,000,000 cu. ft. per mo.
12½c per thousand net

All over 51,200,000 cubic feet per month,

10c Per Thousand Net

WACO—

90c per thousand cubic feet, net.

WICHITA FALLS—

67½c per thousand cubic feet, net.

ARDMORE—

First 100,000 cubic feet.....50c
Next 200,000 cubic feet.....40c
Next 200,000 cubic feet.....30c
Over 500,000 cubic feet.....25c

ENID—

First 200,000 cubic feet.....50c net
Over 200,000 cubic feet.....18c net

CORPUS CHRISTI—

First 5,000 cubic feet..... .....60c net
Next 5,000 cubic feet.....55c net
Next 40,000 cubic feet.....50c net
Next 200,000 cubic feet.....45c net

TULSA—

First 100,000 cubic feet.....60c net
Over 100,000 cubic feet.....18c net

BROWNWOOD—

50c per thousand cubic feet.
$1.50 minimum charge.

GAINESVILLE—

67½c per thousand cubic feet, net.

FORT WORTH—

67½c per thousand cubic feet, net.

BEAUMONT—

First 20,000 cubic feet.....45c net
Next 20,000 cubic feet.....30c net
Next 60,000 cubic feet.....35c net
Next 150,000 cubic feet.....30c net
Next 250,000 cubic feet.....28c net
Next 500 000 cubic feet.....25c net
Next 1,000,000 cubic feet.....25c net
Next 3,000,000 cubic feet.....24c net
Next 5,000,000 cubic feet.....23c net
Next 10,000,000 cubic feet.....22c net
220,000,000 cubic feet and over..21c net

CORSICANA—

67c per thousand cubic feet, net.

WELLINGTON, KANSAS—

58c per thousand cubic feet, net.

EL RENO—

First 200 000 cubic feet.....80c net
Over 200,000 cubic feet.....25c net

GRAHAM—

First 300,000 cubic feet.....67½c net
Next 200,000 cubic feet.....45c net
Next 500,000 cubic feet.....36c net
Next 1,000,000 cubic feet.....31½c net
Over 2,000,000 cubic feet.....28c net

AMARILLO GAS COMPANY

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The Geology and Oil Fields of Archer County, Texas*

By W. E. Hubbard, and W. C. Thompson
Wichita Falls, Texas

ABSTRACT

Within the last three years Archer County, Texas, has risen from a position of relative unimportance as a producing area to one of the principal productive districts in the Mid-Continent field. At the present time there are 34 producing areas varying in size from pools of one or two wells to fields covering as much as 1200 acres. Practically all of the production is confined to sand zones in the lower part of the Cisco group (Pennsylvanian) which are regionally persistent but locally very erratic. Development and operating costs are low, the oil is of high gravity (39-42 Baume), and the wells are relatively long-lived.

The paper discusses the origin and accumulation of the oil as problems of porosity, ultimate yield, etc., of this particular district. Various tables show pertinent facts regarding individual fields and the relationship of surface to subsurface structure. Cross-sections show stratigraphic relationship of the fields and of the county to adjoining areas.

DURING the past two years Archer County has become one of the important petroleum areas of Texas, having produced during that time at the rate of more than 30,000 barrels of high gravity oil daily. Practically all of the production comes from the middle portion of the Cisco formation, the uppermost member of the Pennsylvanian system of North-Central Texas. The principal productive zone is present over a wide area although, locally, it is very lenticular and erratic. Drilling and development costs are low, with the result that the district has been a boon to the independent operator. Consequently, the county has been developed in a relatively short time.

History

The first oil well in Archer County was the No. 1 Andrews of Poppenburg burg and Miller, drilled in 1911 in the southeastern part of the county; it produced 10 barrels daily from a sand at 920 feet. Though this well was small, it caused considerable development by the Magnolia Petroleum Company, but after several dry holes had been drilled in the vicinity, the incident was forgotten. Interest was revived in 1916 by the completion of the Panther Petroleum Company's Wilson No. 1, south of Holliday, as a 20-barrel well from a sand at 1630-1636 feet. Drilling which had heretofore been sporadic was started in earnest, but the results were disappointing since the pool included only a dozen wells and in the next five years over 100 wildcats were drilled without a discovery.

The year 1921 marked the opening of the first Archer County field of consequence. In March of that year, the Texhoma Oil and Refining Company completed their Gose No. 1 as a 250-barrel well from a sand at 1599-1604 feet. The Texhoma-Gose field, as this area was later named, is about seven miles southwest of the Panther pool, and still surpasses all Archer County pools in acre-yield of oil.

In August, 1922, the Freeman-Hampton field, important both for its size and the presence of three producing horizons, was discovered.

The spring and summer of 1923 saw the attainment by Archer County of an important place among the producing counties in Texas. In rapid succession, the Peterson, Swastika, Sunshine State, and Wilmot pools were opened and by fall the total daily production was about 40,000 barrels. This production has been essentially maintained during 1924 and 1925 by the addition of such pools as the Atlantic, Harmel, Ragle, and Carey, the latter including wells which produced over 1000 barrels per day from a sand around 1100 feet.

To date (September 1, 1925), Archer County has produced some 27,300,000 barrels of oil and is now maintaining a daily production of 33,000 barrels. New pools from the present known sands and development of deeper horizons should maintain this production for several years.

Acknowledgements

The authors wish to acknowledge the helpful criticisms and suggestions of W. E. Pratt and F. H. Lahee, chief geologists of the Humble Oil and Refining Company and the Sun Oil Company, respectively, and permission by them for the presentation of this paper. It is impossible to acknowledge in detail the assistance given by numerous others in discussions and interchange of ideas, but special credit should be given Messrs. J. V. Adams, Virgil E. Pettigrew and A. J. Viets for assistance in the collection and assembling of data both in the field and office.

Geography

Archer County lies in the North-Central Texas oil belt, in a position roughly midway between the eastern and western boundaries of the state and a short distance south of Red River, the Oklahoma boundary. It is bordered on the north by Wichita County and on the south by Young County, both of which are important producing areas. Clay County, known from the old Petrolia field, is on the east while Baylor County, which has recently become a small producing territory, lies to the west (Fig. 1).

Archer County lies in the semiarid plains region of Northern Texas. The present land surface is a partially dissected peneplain. The drainage is toward the east through three main water courses trending north of east. The extreme northwest corner is drained by Wichita River, the southeast corner by the west fork of the Trinity and the remaining two-thirds of the county by the Little Wichita. Sea level elevations range from about 900 feet at the point where Little Wichita River crosses the east boundary of the county to slightly over 1300 feet in the vicinity of Megargel, 4 miles north of the southwest corner of the county. The slopes of the ridges between the water courses are gentle to the northwest and steep to the south-southeast due to the prevailing northwesterly dip of the rocks. The climate is one of extremes, the temperature ranging from 5 degrees to 110 degrees Fahrenheit. The annual rainfall is about 28½ inches. Due to the hot summer winds from the south and the insufficiency of the rainfall, farming is hazardous and most of the land is given over to cattle raising. The soil is varied in character, ranging from calcareous and sandy clay to pure clay.

The county is served by three railroads, the Wichita Falls and Southern, which operates between Wichita Falls and Breckenridge, traversing the county from northeast to southwest, the Wichita Valley running across the northwest portion, and the Gulf Texas and Western cutting diagonally across the southwest corner.

There are no paved roads nor are good dirt roads numerous, so that in wet weather field transportation becomes a serious problem.

Stratigraphy

Since interest in the Archer County

*Reprinted from the Bulletin of the American Association of Petroleum Geologists, May, 1926.

BIG LAKE OIL COMPANY

Producers

of

Reagan County High Grade

Crude Oil

and

Natural Gasoline

Executive Offices
Pittsburgh, Penna.

Field Offices
Texon, Texas

area centers chiefly on the Cisco and Wichita-Albany formations, no attempt will be made to describe in detail the older Paleozoic rocks which are exposed south of Archer County. While these formations have a definite bearing on the geology of Archer County, little is known of their character in this area so far from their outcrop.

Ellenburger Formation

The Ordovician Ellenburger limestone, which may be considered the basement formation upon which the productive horizons of Northern Texas were laid down, has as yet been unproductive. In the cenrral mineral region of Texas, this formation consists of a few hundred feet of siliceous limestone while the Arbuckle and Wichita Mountains, in Southern Oklahoma, the Arbuckle limestone, with which the Ellenburger is tentatively correlated amounts to several thousand feet of massive limestone.

Barnett Shale

Between the Ellenburger and the overlying Marble Falls limestone is the Barnett (lower Bend) shale of Mississippian age. This formation consists of dark gray and black shale, 50 to 150 feet thick which rests on a relatively flat surface of folded Ellenburger.

Bend Group

The basal Pennsylvanian Bend group is composed of two formations, the Marble Falls limestone and the Smithwick shale above. The Marble Falls limestone consists of about 200 to 600 feet of gray and black limestone with beds of black and green shale and is the source of the famous "black lime" production of Eastland and southern Stephens counties.

The Smithwick shale marks a transition from the limestone series of the lower Pennsylvanian to the more clastic materials of the overlying Strawn. The Smithwick is a black fissile shale, becoming more sandy and lighter colored toward the top; it is 200 to 400 feet thick. This formation thickens northward as does the Marble Falls with the addition of several relatively thin lime members. These latter beds are the source of the "gray lime" production of Stephens County.

Strawn Group

At its outcrop, the Strawn group consists of sandstone, shale, and an occasional thin limestone. The maximum thickness as measured by Wells and McLeod at the outcrop is slightly over 3800 feet.[1] The group thins westward, being but 500 feet thick a few miles north of Coleman and is noticeably thinner along the axis of the Bend Arch. This group is also the principal coal-bearing division of Northern Texas and is productive of oil and gas at various horizons in Eastland, Stephens, Young, Shackelford and adjacent counties.

Canyon Group

The Canyon group consists essentially of limestone and shale, measuring typically 900 to 1000 feet in thickness. It is composed of four massive limestone members, named from the top down: Home Creek, Ranger, Adams Branch, and Palo Pinto. These limestones form bold escarpments and are noticeable in well logs in areas far from their outcrop. By tracing some of these beds northeastward they may seem to become more sandy, indicating a source of material from the north and northeast. The character of the Strawn beds below and the overlying Cisco indicate a similar source.

Cisco Group

The Cisco group, comprising the youngest Pennsylvanian of Northern Texas is made up of alternating beds of sandstone, shale, and thin limestone, with several coal seams in the middle portion. Measured across its outcrop in Eastland, Stephens, and Young counties, it varies from 900 to 1800 feet in thickness but it thickens rapidly northward from central Young County. The presence of chert conglomerate and many small local unconformities suggest rapidly oscillating shore lines during its deposition. It is conformable both to the Canyon below and the Wichita-Albany of the Permian above. The upper portion changes to a typical red-bed facies in northern Young, southern Clay, and Archer counties. It is the chief petroliferous series of the

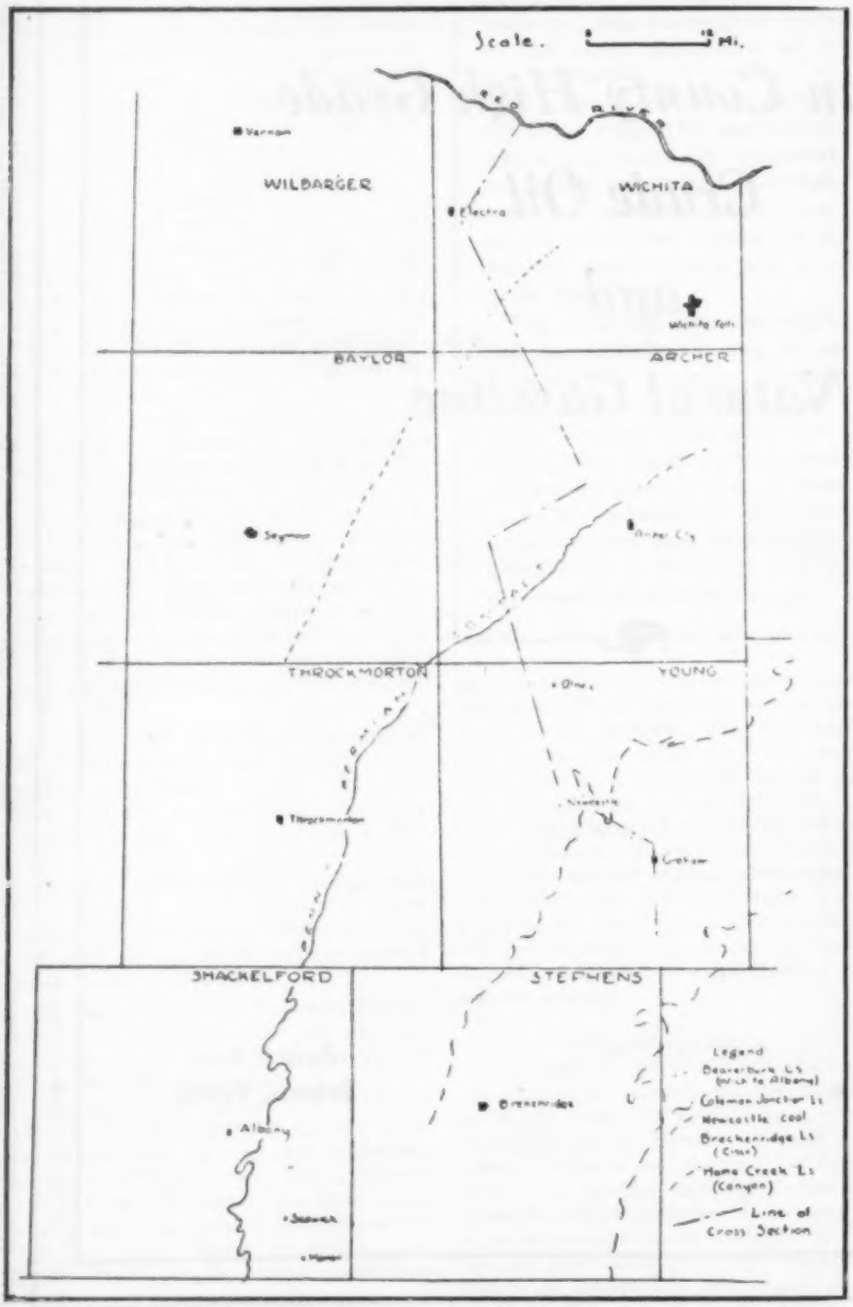

Figure 1—Map showing the Pennsylvanian-Permian contact and the outcrop of other key horizons in North-Central Texas

[1] F. B. Plummer and R. C. Moore, "Stratigraphy of the Pennsylvanian of North Central Texas," Bur. of Econ. Geology, Bull. 2132, 1921, p. 63.

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The Pennsylvanian is represented in Archer County by approximately the upper 400 feet of the Cisco which outcrops in a triangular area, comprising the southeastern portion of the county.

For the most part, the section is of a typical red-bed character though in the extreme southwest corner where the uppermost portion is exposed, it closely resembles the Cisco in Young, Stephens and Eastland counties to the south. In the section exposed, there are 26 well defined sandstone horizons with chert conglomerate present locally. The sandstone beds are light to dark gray and brownish red, with a thickness of from 1 to 5 feet. The intervening shale is uniformly red.

The Coleman Junction limestone, regarded as the top of the Cisco, crops out in the Swastika and Harmel pools of southwestern Archer County. To the northeast it can be traced but a short distance due to the gradational change to red beds. However, the approximate position of the Cisco-Wichita (Permian - Pennsylvanian) contact across the county has been defined by the tracing of sandstone layers in the upper Cisco and basal Permian. Fig. ure 1[2] shows the contact as worked out in this fashion. It will be noted that Archer City is shown to be within the boundary of the Cisco, where previously it has been assumed that but a small portion of the southeastern part of the county was covered by Pennsylvanian rocks. The average strike of the Cisco in southern Archer County is about N. 72 degrees E. If this direction be used in projecting the contact eastward from the outcrop of the Coleman Junction near the Swastika pool, its trace will fall considerably south of Archer City. However, when it is remembered that Archer City and vicinity are about 300 feet lower in elevation than the Swastika pool, the reason for the change in location of the contact is apparent.

There is little surface evidence of an unconformity between the Cisco and Wichita and from subsurface evidence it appears that whatever uncomformable relationships exist are as readily recognized within the formations themselves as at their contact.

Permian Rocks

The Wichita group in Archer County is represented by about 500 feet of intercalated light-colored to reddish sandstone and red shale not notably different in appearance from the red Cisco below. The sandstone beds are from 1 to 10 feet thick and from 10 to 35 feet apart although there is one 60-foot shale interval about 250 feet above the base of the section. The sandstone layers form good escarpments along the major streams and can be traced definitely for moderate distances, though their lenticular nature renders exact measurement of intervals difficult.

The uppermost exposed division of the Wichita group is the Beaverburk limestone which crops out in a relatively small area in the extreme northwestern part of the county. This limestone, or more precisely, dolomite, is important as a key horizon and it can be traced southwestward to the south line of Baylor County where its interval above the Coleman Junction can be determined readily due to the limy nature of the intervening section in northeastern Throckmorton County.

Producing Horizons

With scant exception all of the oil produced in Archer County comes from four definite zones in the Cisco known respectively as the Texhoma-Gose, Upper Wilmot, Dalmar, and Lower Freeman-Hampton pays. Their relative importance is indicated by Table I.

Table I

Sand	Number of Wells
Gose	1,689
Dalmar	12
Lower Freeman-Hampton	243
Upper Wilmot	94

Texhoma-Gose Sand

The best-known and most productive pay zone in Archer County is the Texhoma-Gose sand, also variously referred to as the Archer County, Miller, and Swastika sand. It is productive in every field with the exception of the Dalmar, Shappell, and T. B. Wilson pools which are relatively unimportant. The depth of this sand ranges from about 900 feet in the Miller pool near the south county line to about 1640 feet at the north edge of the county. It has produced about four-fifths of the county's production and bears an even larger ratio to the present daily total.

The stratigraphic position of the Texhoma-Gose sand is generally considered as directly beneath the Gunsight limestone (Fig. 4). The interval between the top of the Gose pay and the Coleman Junction limestone, the uppermost bed of the Cisco, is slightly over 1300 feet in southern Archer County, 1400 feet in central Archer County, and about 1350 feet in the Electra pool of western Wichita County.

The sand is not continuous nor is the interval between it and the Gunsight limestone constant. It may occur any place within a 50-foot zone, which in turn lies from 1 to 20 feet below the lime. The pay sand varies from a mere streak to as much as 30 feet in thickness with an average for the county possibly 6 or 7 feet. The interval between the sand and the lime remains fairly constant within the limits of the various pools. In some sections there are two distinct pays some 40 or 50 feet apart. Abrupt changes in intervals and thicknesses occur locally from one location to another causing dry holes to be surrounded by pood producers, and vice versa.

Lower Freeman-Hampton Sand

Next in importance is the Lower Freeman-Hampton pay or the 1750-foot sand of northern Archer County. It is the chief source of oil in the Freeman-Hampton and Orton pools and the only producing horizon in the Tad Wilson and Shappell pools. It is probably the 1750-foot sand in the Kemp-Munger-Allen pool and the 1900-foot sand at

[2]The authors wish to acknowledge information on the outcrops of various Pennsylvanian beds from Messrs. V. E. Pirini, Jr., and A. W. Johnson.

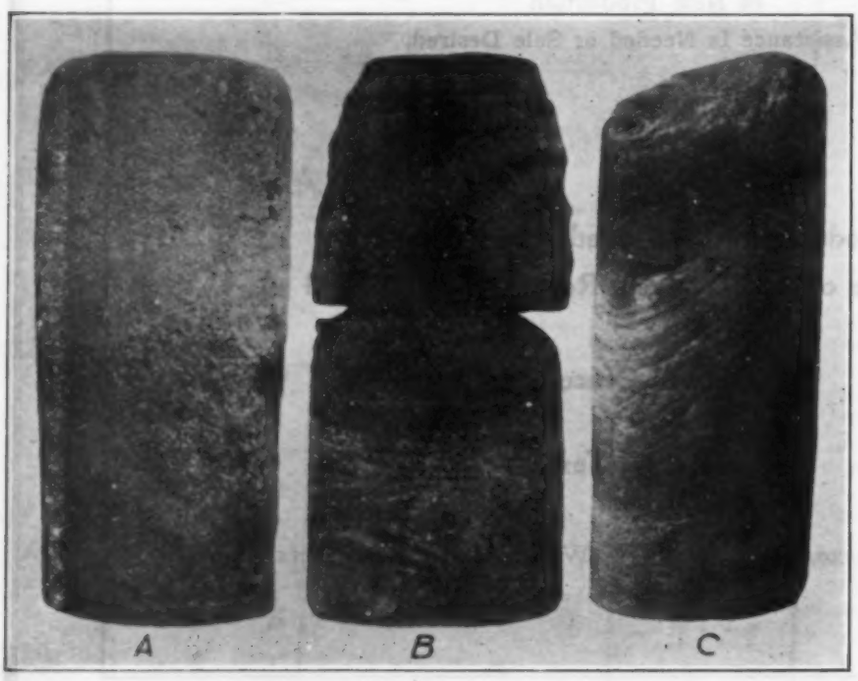

Figure 2—Cores of sand from North-Central Texas. (A) Sand at 1578-1579 feet from Gose No. 21, Texhoma Gose field (courtesy I. R. Sheldon). (B) Sand at 1588-1589 feet Gose No. 33, Texhoma Gose field (courtesy I. R. Sheldon). (C) A typical sand core sample from a northern Archer County well.

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Figure 3—Outcrop of Gunsight limestone (X), west of Graham, Young County, Texas

Electra. Like the Gose sand, this pay is made up of two lenses locally (Freeman-Hampton pool) about 40 feet apart, the most productive of which is the upper one. The top of this horizon lies about 160 feet below the Gose pay and the thickness of the producing sands averages about 7 feet. With reference to the Cisco formation, it should lie a short distance above the Bunger limestone.

Upper Wilmot Sand

The Upper Wilmot pay, occurring about 190 to 200 feet above the Gose horizon, is productive in Wilmot, Peterson, Sunshine State, Oil Investment, and Freeman-Hampton pools and has produced about 5 per cent of the total oil of the county. Its interval above the Gose pay is tolerably constant in north-central Archer County but declines to 160 feet in the Freeman-Hampton area. In none of the fields in which it produces is its areal extent as great as that of the Gose sand nor in any pool is it as important economically. Its thickness is slightly less than that of the Gose pay. It probably lies not far above the Breckinridge limestone and hence may be correlated roughly with one of the pay horizons of Callahan County.

Dalmar Sand

The Dalmar horizon has been relatively unimportant to date. It is productive at 1000 feet in the Dalmar and 1100 feet in the Oil Investment pool. Its interval of a little more than 300 feet above the Gose sand places it approximately at the Newcastle coal horizon or about the equivalent of the second pay at Putnam in Callahan County. It carries considerable water (in the Oil Investment pool usually no more than a foot of sand can be drilled) as there are but 12 wells producing from it in the county, its total production has been negligible.

Other Sands

In addition to the pay zones described there are a few shallower sands of minor importance which produce in the Wilmot, Holliday, and Freeman-Hampton pools of northern Archer County. The 900-foot sand in the north end of the Wilmot pool lies 700 feet above the Gose sand, placing it in section between the Camp Colorado and Dothan limestones. It has afforded several wells of more than 100 barrels initial production. Two higher horizons, respectively 820 and 930 feet above the Gose sand, produce in scattered areas near the towns of Holliday and Mankins. None of these three sands have been thoroughly tested in the producing areas of northern Archer County and their exploitation can be expected to add a fair percentage of production to the total oil recovered from the various fields.

Only the Gose or Swastika sand is productive in the fields of south Archer County but in at least two wells, the Barclay No. 1 Wright, east of Megargel, and Rayzor No. 1 Porter, south of the Green-Flowers pool, a sand slightly less than 250 feet above the main pay has been noted. This is probably the equivalent of the Dalmar or Upper Wilmot pay.

Relation of Sand Bodies to Source of Oil

The depositional nature of the producing zones is indicated in a graphic manner by production maps of many of the fields. Large producers offset dry holes in the very heart of some of the pools and the sands pinch out from a thickness of 15 or 20 feet to less than a foot in a very few hundred feet. This rapid and erratic gradation from sand to sandy shale and shale and the common occurrence of cross-bedding indicate constantly changing currents and rapidly shifting shorelines (Fig. 2).

A study of the Gose horizon as it has been correlated with an outcrop one-half mile west of Graham in Young County (Figs. 3 and 4) reveals that the shale below the sand is rich in carbonaceous material and, as far as observed, devoid of marine fossils, while the sand itself contains fossils undoubtedly marine in origin. This succession suggests a tidal flat or lagoonal origin for the shale and a marine one for the sand, probably caused by an advancing bar or barrier beach over a coastal marsh. In many wells coal is logged a short distance below the sand, which is a further indication of the terrestrial origin of the shale at least in part. The writers are of the opinion that the oil, or perhaps more properly, its parent substance, originated mostly in the shale below the sand probably not long after its deposition and during the subsequent compacting was literally squeezed from the mud into the sand along with the connate water. In support of this belief in an upward rather than a downward migration, we suggest that an upward direction should ordinarily be the line of least resistance in sediments, the porous members of which are very lenticular, inasmuch as during the compacting process, the underlying sediments are invariably more compacted and hence more impervious than those near the top.

However, should a thick continuous sand underlie the source rock and by virtue of its permeability afford an

Figure 4—Outcrop showing Gunsight limestone and underlying sandy beds, west of Graham, Young County, Texas

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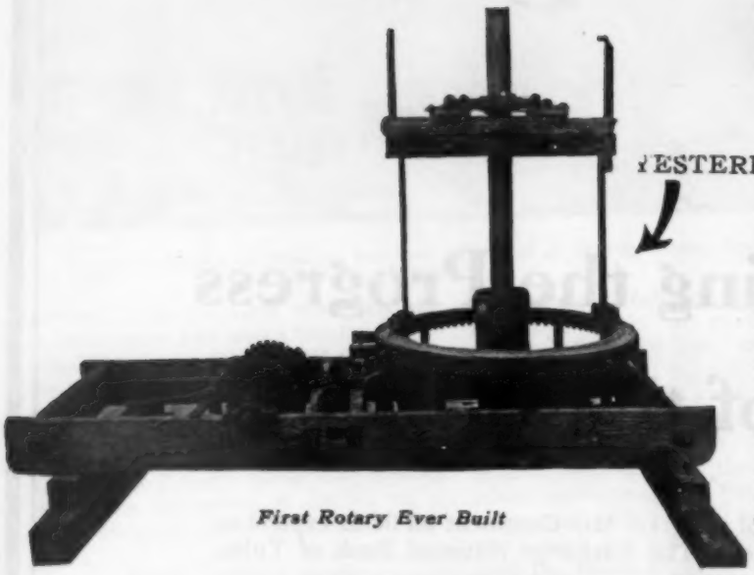

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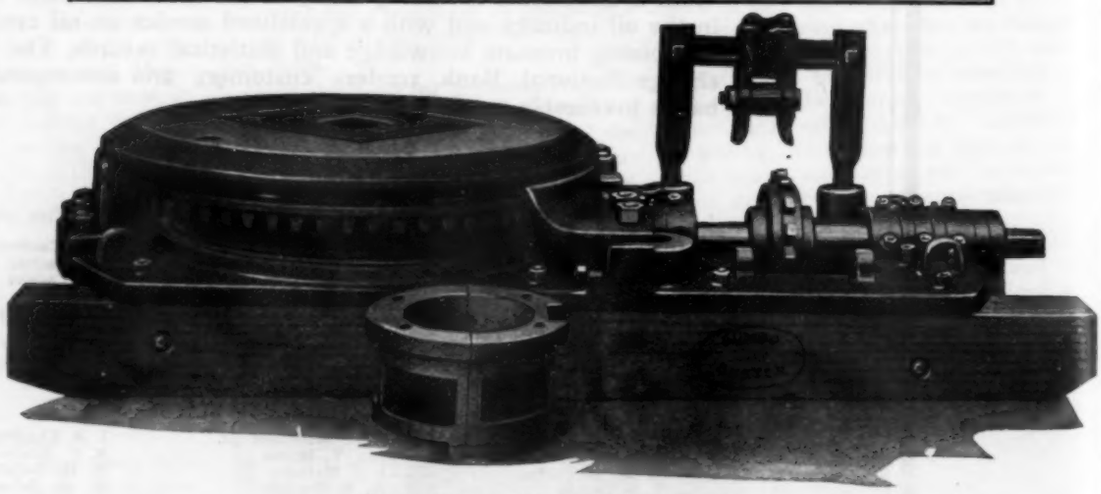

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easier escape for the connate water it is clear that the migration might well be downward. As noted, this situation does not obtain in the sediments under consideration.

As the writers know of no appreciable faulting in the Cisco of Archer County, it is assumed that once the oil has migrated into the sand, it remains there, further movement being controlled by the structure of the particular sand lense.

Nature of Oil Sands

The oil sands are composed almost entirely of subangular to poorly rounded transparent quartz grains with occasionally glauconite and more rarely some of the heavy minerals present. The degree of cementation is slight and the sands are normally soft and friable.[3] The matrix is composed chiefly of calcareous and clayey material. When not stained with oil, cores of the sand have a characteristic light-gray color.

A rather high degree of sorting usually prevails in the sands from producing wells. An average for samples of the Gose sand from eight producing wells shows the following composition as to size of grain.

2-1 mm.	1-½ mm.	½-¼ mm.	¼-⅛ mm.	⅛-1 1/16
0 per cent	24 per cent	46 per cent	29 per cent	1 per cent

Porosity

Porosity determinations were made by referring the specific gravity of various core fragments (corrected for the percentage of oil in the samples) to the specific gravity of the solid mineral matter in the cores. Using this method for characteristic core samples from nine wells, an average result of 22.8 per cent was obtained, the range being from 19.4 to 24.6 per cent.

Oil Recovery

The percentage of recovery from the sands varies greatly. One large lease in the Texhoma-Gose field will produce between 10,000 and 13,000 barrels per acre with an average sand thickness of not more than 10 feet, indicating a recovery of from 58.5 to 76 per cent.

In the Freeman-Hampton pool, 48 acres are productive in the 1440-foot sand, 282 acres in the 1580-foot sand, and 590 acres in the 1740-foot sand, a total of 940 acres. The average sand thickness for the 940 acres is 8 feet, and the estimated gross ultimate production for the field is 7,520,000 barrels or 8000 barrels per acre. Assuming the percentage of pore space to be 22.8 per cent, a recovery of 56.5 per cent is indicated. Many areas will undoubtedly fall well below these figures but the average for the County should probably be about 50 per cent.

No general statement of acre yield will be applicable to separate pools. Estimates for the Texhoma-Gose and Freeman-Hampton pools, cited above, will likely be somewhat above the average. Based upon present producing acreage, total production to date, probable future production of wells now producing, the average production per acre in Archer County should be slightly in excess of 7000 barrels.

Structure—Regional Structure

The major structural feature of Archer County is a broad north-plunging arch trending from south to north through the center of the county. Evidence of this is present in both the Cisco and Wichita groups. Local flank folds, both surface and subsurface, plunge away from the axis of this major arch, while those near the crest generally plunge northward down the pitch.

As the prevalent dip of the upper Pennsylvanian and lower Permian is a gentle one to the northwest the reflection of the easterly limb of the fold is largely evidenced by either an arresting of the normal dip or a change of this regional dip from northwest to north, although in northeastern Archer County dips to the northeast are sufficiently numerous to postulate a regional dip in this direction.

Generalized subsurface contours (i.e., lower Pennsylvanian, Fig. 5) of the area between Stephens County and Red River show that the folding noted above is intimately associated with a prolongation of the axis of the Bend Arch and can well be assumed to be a reflection of the latter.[4] Indeed, there is much evidence to show that the Bend Arch, after swinging to the northwest in northern Archer County, joins with the Red River Arch near the Electra pool. Again the distribution of the Seymour (Tertiary) gravel suggests that the axis of the arch was comparatively high during the deposition of the former or else subsequent folding subjected this formation to more erosion along the axis thus leaving remnants of it only in the synclinal areas.

From the foregoing it is patent that the regional folding has been cumulative in that the movement which started in Bend time has continued more or less along the same lines of weakness causing the dips to become progressively steeper with depth.

The producing fields of Archer County seem to group themselves along the axis of this hypotheticated extension of the Bend Arch, with their major axes, in turn, generally normal to the direction of the general strike in the area in which they are located.

Local Structure

The surface rocks of Archer County, while not strongly folded, have been subjected to influences that have given rise to numerous folds which may be noted in any area where sufficient outcrops are

[3] In a few instances, the producing zone is a porous coarsely crystalline limestone. Notable examples include the Coody Ranch south of Archer City, the Sun Oil Company Famer No. 1, and the Brader pool.

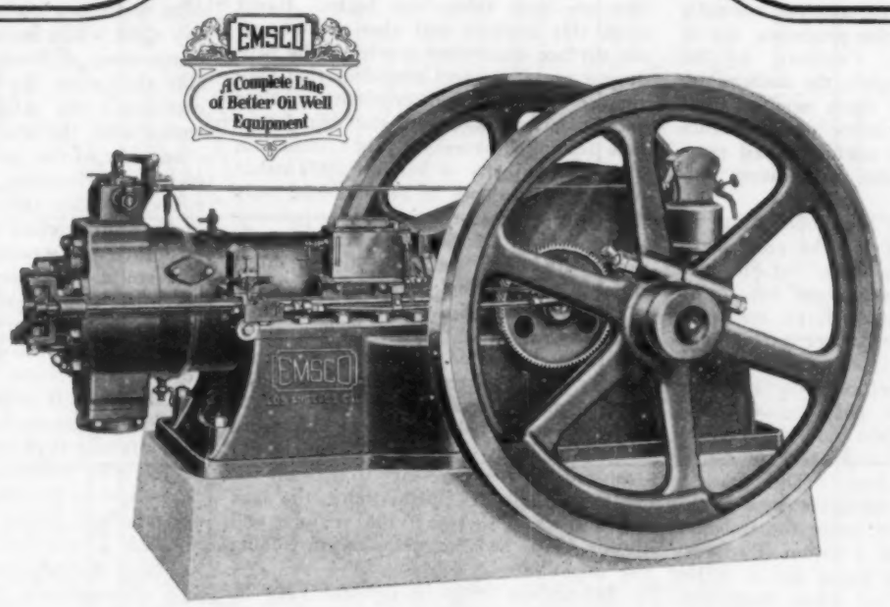
[4] Why this reflection of the Bend Arch is not as strong in the surface beds farther south, i.e., the lower Cisco and Canyon of Stephens and Eastland counties is a problem for future study but the general change in strike from northwest to northeast in northeastern Archer County may be largely due to the influence of the Red River Arch.

Table III
Archer County Oil Pools*

Pool	Date	No. Acres	Prod. Wells	Dry Holes	Sand Depths	Sand
Atlantic	5-10-24	131	41	12	1,550	1
Barkley-Meadows	11-17-23	50	13	4	1,570	1
Brader	6- 4-23	26	5	4	1,260	1
Burns & Maxson	5-13-25	55	13	5	1,415	1
Carey	10-11-24	208	75	22	1,100	1
Comac	4-20-24	65	13	6	1,460	1
Dalmar	5- 5-22	20	4	2	1,020	3
Freeman-Hampton	8- 1-22	940	306	36	1,440-1,580-1,740	1-2-4
Green-Flowers	4- 5-25	48	8	4	1,400	1
Harmel	9-11-24	731	188	46	1,300	1
Humphrie (White)	6-14-24	291	78	17	1,400-1,590	1-2
Ikert	2-12-25	40	15	4	1,270	1
Major	5- 3-24	40	13	3	1,020	1
McCarty	5- 2-24	71	21	6	1,580	1-900′
Miller	10- 7-11	25	4	4	900	1
Muse-Robertson	5- 6-25	50	17	4	1,200	1
Norday	6-18-25	55	18	6	1,400	1
Oil Investment	11-22-24	80	23	6	1,105-1,205-1,415	3-2-1
Orton	4-16-24	81	17	5	1,430-1,590-1,800	1-2-4
Panther	8- 6-16	48	10	11	1,600	1
Pease	7-12-24	5	2	3	1,470	1
Peterson	3- 3-23	248	87	8	1,380-1,580	1-2-900′
Ragle	6-21-24	231	75	11	1,090	1
Riner-Bailey	1- 5-24	225	75	14	1,620	1-2-900′
Shappell	2-13-23	185	29	6	1,800	4
Stampli-Roberts	11-20-24	250	78	29	1,350	1
Sunshine	5- 1-23	420	122	10	1,380-1,580	1-2
Swastika	5-12-23	451	166	41	1,350	1
Texhoma-Gose	4-15-21	513	87	15	1,600	1
Waite Phillips	8- 5-24	75	25	7	1,500	1
Wilmot	6- 6-23	1,282	387	39	1,380-1,580	1-2-900′
Wolfe	4-11-25	15	3	1	1,370	1
Wilson (Howard)	4-18-25	40	7	4	1,700	4

1—Gose, 2—Upper Wilmot, 3—Dalmar, 5—Lower F. H.

*During the first eight months of 1925, 592 producers have been completed with an average initial production of 97 barrels (Table 11.)



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present. The predominant type of surface fold is a small plunging anticlinal nose or terrace, usually without closure and with never more than 10 or 15 feet of closure. The axial direction, as in the case of the pools, is variable but normally in the direction of the prevailing dip in the particular area. Contrary to the views of some geologists, the authors are of the opinion that these surface folds are not a reliable index of subsurface conditions, and that surface detail mapping is of little value in locating new fields.

Some fields have been opened up by wildcat tests drilled for the purpose of testing surface structures but in such cases subsequent development has shown that production covered large areas extending indiscriminately over the high and low areas of surface folding and, as often as not, with the surface folds overlying subsurface synclines and vice versa. A good example of this condition may be illustrated by the Harmel pool of southwestern Archer County. This area is chosen because the surface structure may be worked accurately using the Coleman Junction limestone as a datum. Two very pronounced surface folds lie on either side of this field and while small production extends over one of them, the heart of the field and the high point of the subsurface fold lies immediately below the lowest area on the surface (Plate 14).

Of a list of 22 surface folds in the county, chosen because they are generally recognized as such, drilling has revealed that seven overlie subsurface lows, five overlie normal subsurface areas, and but five are over subsurface highs. Based upon this analysis and also a study of the surface conditions overlying the producing areas, we feel confident that subsurface highs lie indiscriminately below anticlinal, synclinal, and monoclinal surface folding. Accepting this assumption, the great majority of surface folds either play out with depth or at least bear only the most general relationship to pre-existing folds. Of the ones which disappear with depth probably the greatest number are settling folds.

In an area of such uniform gentle dips, the origin of the surface structures must be accounted for in some other manner than by stresses derived from distant mountain areas. It is hardly to be expected that sediments such as those on the surface in Archer County could transmit stresses necessary to account for uniform folding. Furthermore, the lack of uniformity between the surface and lower Cisco beds argues against folding of this nature.

Subsurface folds in general may be classified much the same as the surface except that the former are usually more intense, having from 10 to 30 feet of closure and exhibiting more definite axes. The direction of the subsurface axes is apparently governed by the same condition as the surface folds. The intensity of the folds is due in many cases to thickening and thinning of sands since it is often noted that edge wells in a given field will not have any sand while inside wells a few locations away will encounter a considerable thickness. In such cases the lime cap above the sand is lower to correspond with the absent sand.

In view of the similarity of both surface and subsurface structures, it is entirely possible that they were formed under similar conditions. The regional structure and stratigraphy are such that this could have been the case and still leave the two sets of folds unrelated as to relative position of their axes. Since in most cases the axis of both sets of folds is away from the main axis of the Bend Arch, it follows that the folds themselves must be accounted for by other forces than those which lifted the arch. The writers are of the opinion that most of the folds of Archer County, especially those on the surface, were formed in the following manner: (1) settling, including differential compacting of sediments, (2) deposition, (3) folding incident to a shortening of beds in a subsiding area. It is obvious that the foregoing conditions would not affect sediments through any great thickness with sufficient regularity to make surface and subsurface beds conform.

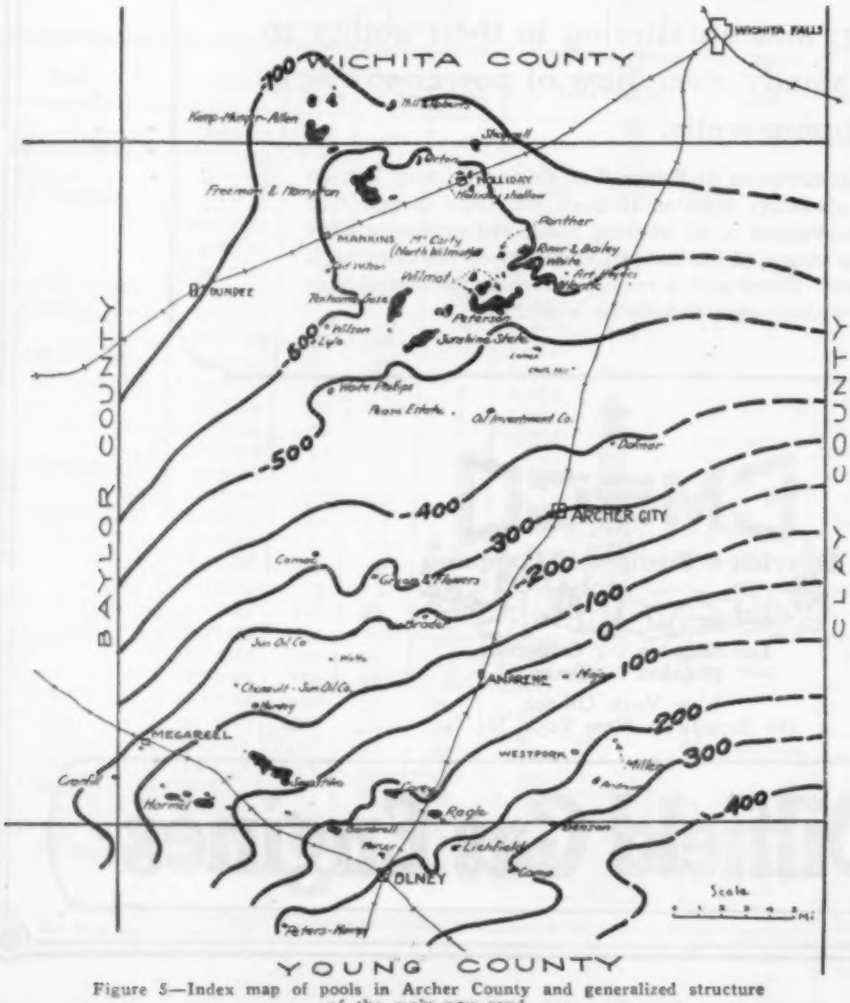


Figure 5—Index map of pools in Archer County and generalized structure of the main pay sand

Surface and sub-surface structure of the Harmel and Stampfli-Roberts fields of Southwestern Archer County. Surface contours (dashed) on the Coleman Junction limestone. Subsurface (solid) on top of pay sand. (Surface geology by M. M. Garrett and Charles P. McGaha.)

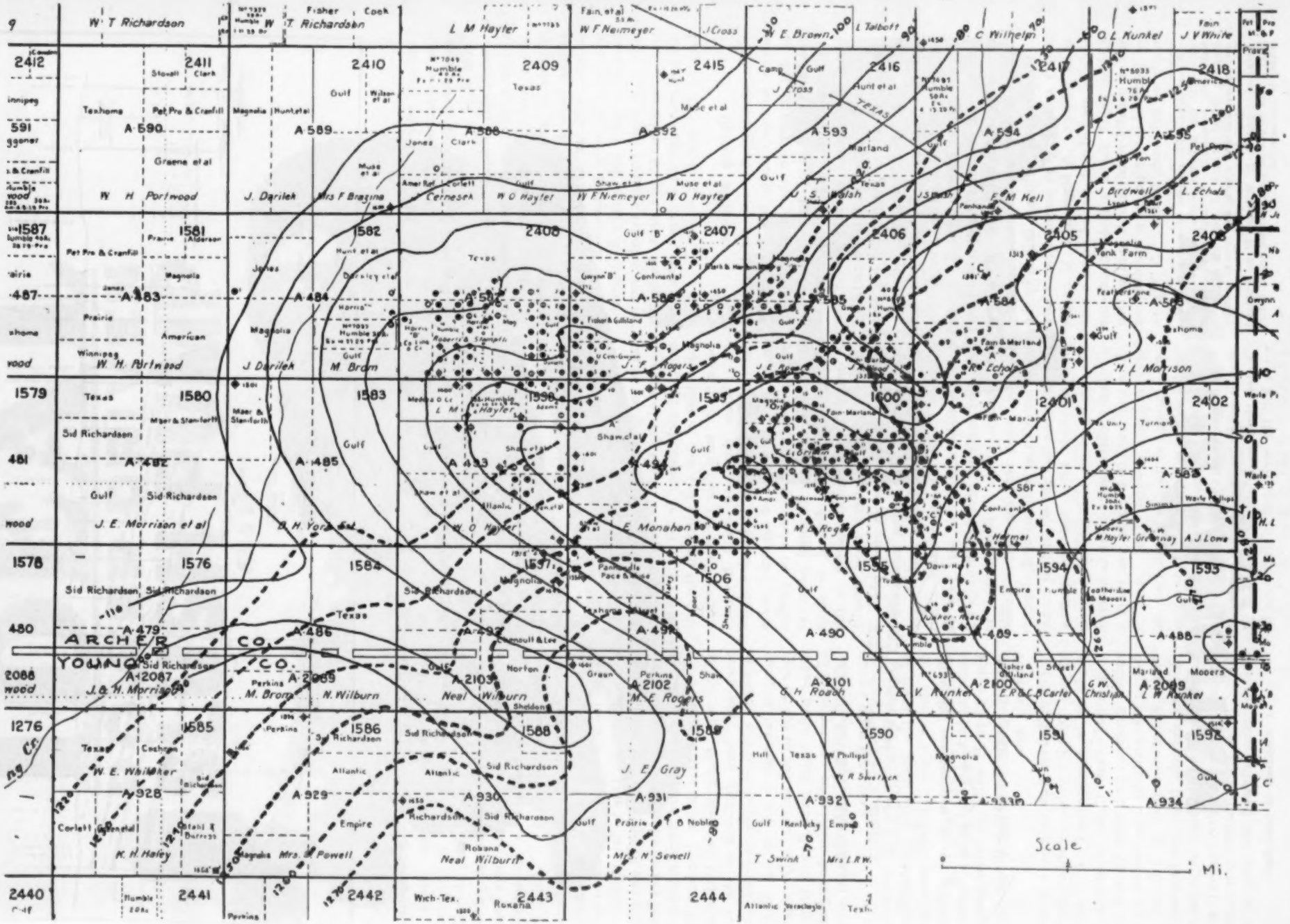
Production and Development

In connection with the consideration of development methods and production of Archer County, it is interesting to note the magnitude of the operations that have taken place. To date there have been drilled in Archer County some 3200 holes, of which 2000 have been productive and the remainder dry. The depth of these holes ranging from 900 feet in the southeastern part of the county to something over 1700 feet in the northern part, probably averages close to 1500 feet. With drilling costs and equipment costs for producers considered, it is thought that the money spent for development will run close to $7 per foot, or a total of over $31,000,000. Although these figures are necessarily an estimate, they serve to give some idea of the amount spent in this area. Table III gives a summary of the principal pools of the county.

Table II

Year.	Production.
1917	44,522
1918	79,000
1919	58,230
1920	54,192
1921	436,146
1922	848,370
1923	5,261,596
1924	11,185,732
1925 (to 9/1)	9,300,000
Total	27,361,788

From the first commercial production to September, 1925, Archer County has



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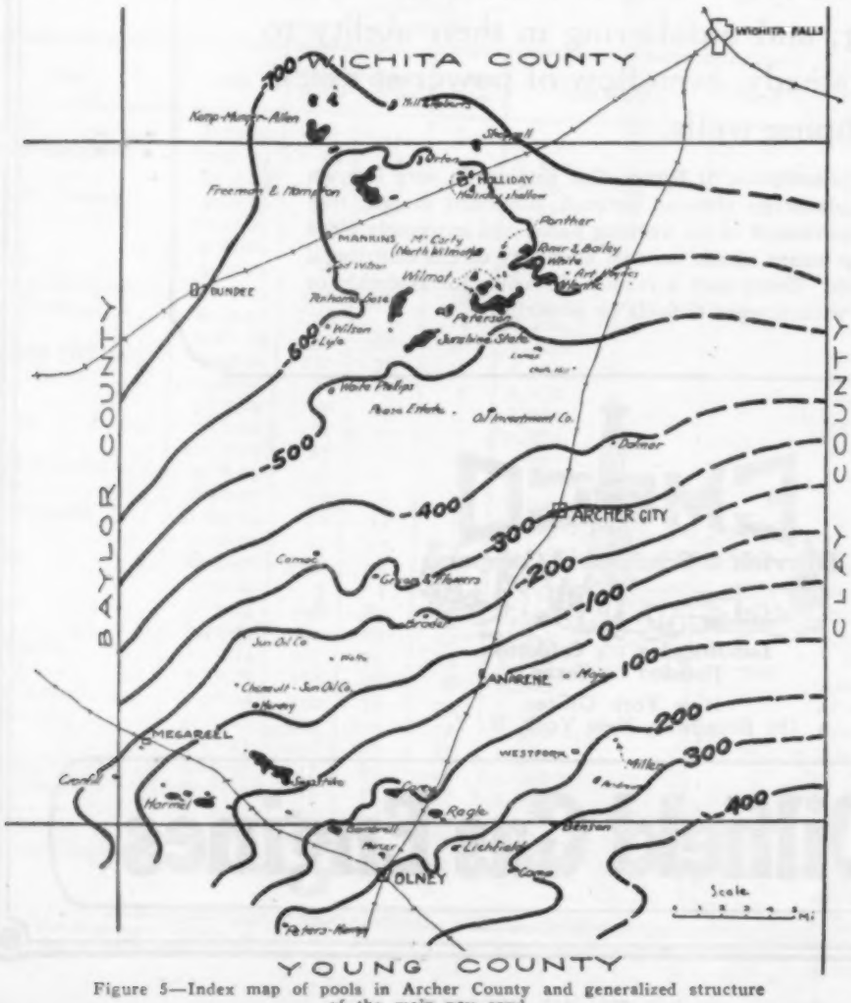

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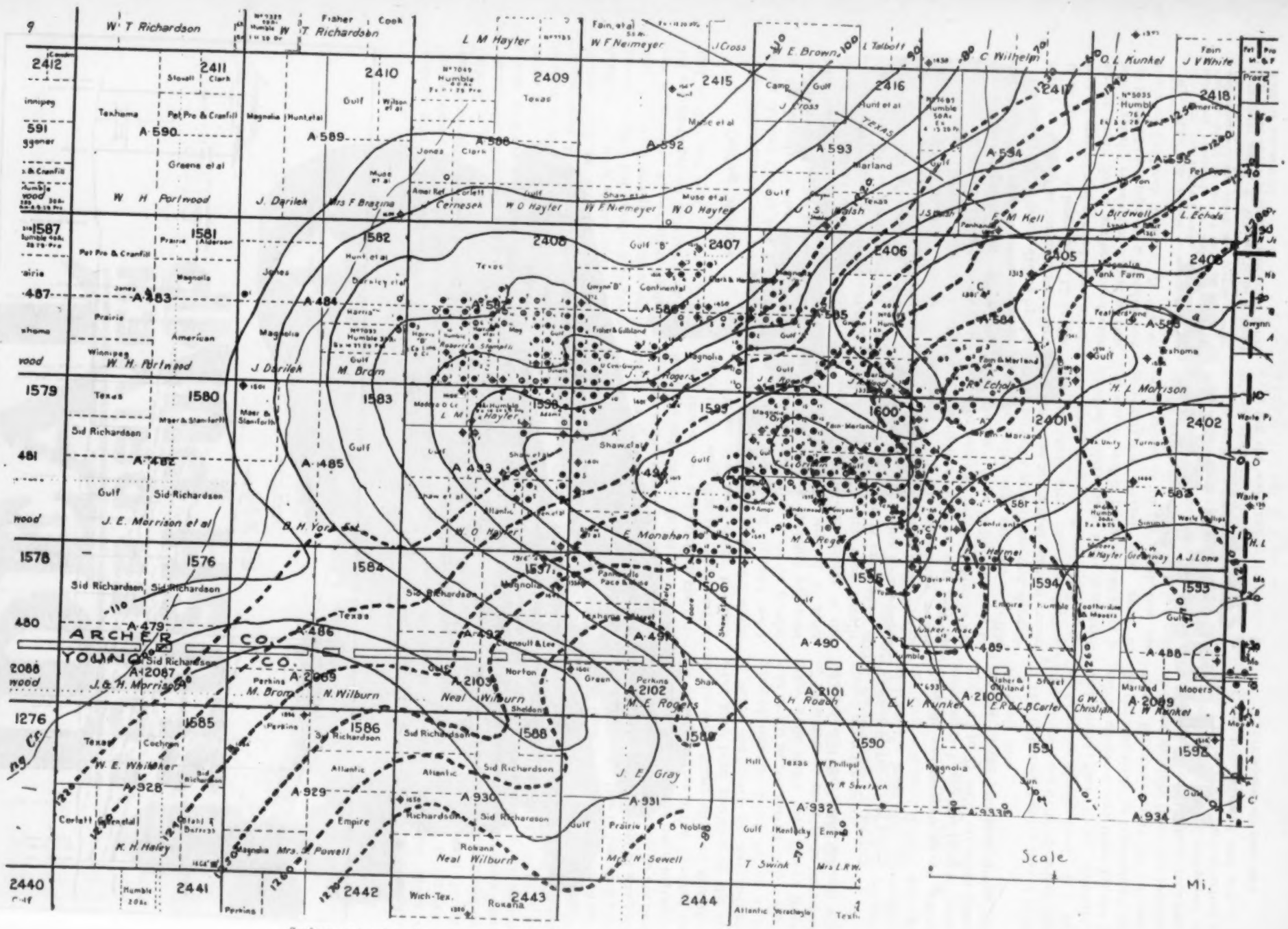

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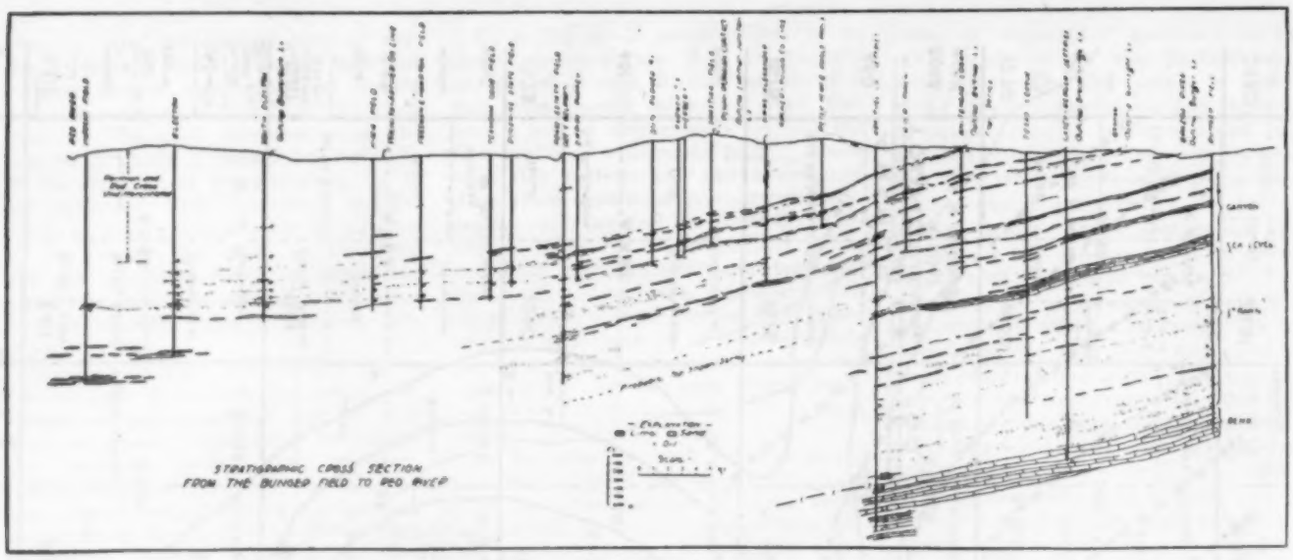


FIG. 6

produced over 27,300,000 barrels of oil. The production of Archer County by years from 1917 to date is shown in Table II.

While this oil has been produced over a wide territory and from several different sands, the character and gravity is more or less constant. The gravity ranges from 37 degrees to 41 degrees Baume, with an average of about 40 degrees. In some instances it is light brown in color but usually it is green. The yield from straight refining methods is, gasoline 43 per cent, kerosene 8.0 per cent, gas oil 21.5 per cent, and fuel oil 27.5 per cent.

Drilling Methods

The thoroughness and rapidity with which Archer County has been tested is due largely to the easy operating conditions and consequent low costs. This feature has been a boon to the small independent operators who are exceptionally active in this district. By the sale of a few tracts near his test to the large companies, the independent usually completes a well without any great cost to himself. The Archer County district offers a striking example of the successful co-operation between the independent operators and the major companies.

Practically all wells are drilled by the rotary system. The common procedure is as follows: A large hole, 12 or 13-inch, is started and carried down a sufficient depth for a surface conductor which usually consists of a joint or two of 10 or 12-inch pipe, or a wooden box made of 2x12-inch lumber. A 9⅞ or 9¼-inch hole is then started and carried to within a few feet of where the sand is expected. A 6-inch bit is then used until the sand is encountered, which is usually under a lime cap from 1 to 4 feet thick and from 1 to 15 feet of gumbo. Most of the drilling is done with fishtail bits, although in the south Archer County fields it is necessary to drill some of the harder lime beds with a rock bit.

If the well is a wildcat, cores are taken to determine the character and amount of the sand. If in a producing field, 6⅝-inch casing is set after drilling a foot or two and catching the cuttings to be sure that the sand carries oil. When the sand depth has been determined, the hole is reamed down to within 2 or 3 feet of the sand and a casing seat made, in shale or gumbo if possible, with a diamond point or V-shaped fishtail bit dressed to about 7 inches. The 6⅞-inch casing is run with an ordinary casing shoe, usually without a packer and in most pools is not cemented. The casing shoe wedges into the cone-shaped hole made by the diamond point bit and usually makes a water-tight seat. The seat may be tested by applying pressure through the mud pumps. After bailing the hole to test the casing seat, the well is drilled in, either with or without mud, depending upon the amount of oil that comes into the hole after the first bailing. Practically every well presents an individual problem since there is no critical water level in the area and there is very rarely a general rule, even in small areas, as to the depth into the sand a well may be drilled. It is a general failure of operators to drill too deep into a sand and get water sooner that it would otherwise be produced.[5] Water thus encountered does not always kill the well, and in fact may be overcome for a time, since it is often noted that water production shows a decline faster than the oil in the early life of a well. However, it is thought that more oil will be recovered and the troublesome factor of water more nearly eliminated where a reasonable amount of sand is drilled.

The early behavior of the producing wells is variable. Initial production ranges from a very few barrels to over a thousand daily. Due to low rock pressure and the small amount of gas present, a majority of the wells do not flow, although the oil rises very rapidly in the hole to within a few hundred feet of the top. Many wells of this character have been swabbed at the rate of 700 to 800 barrels per day and later pumped through 3-inch tubing at the rate of 400 to 500 barrels daily. Again other wells which have flowed from 5 to 10 barrels on completion have yielded no more than this amount when placed upon the pump.

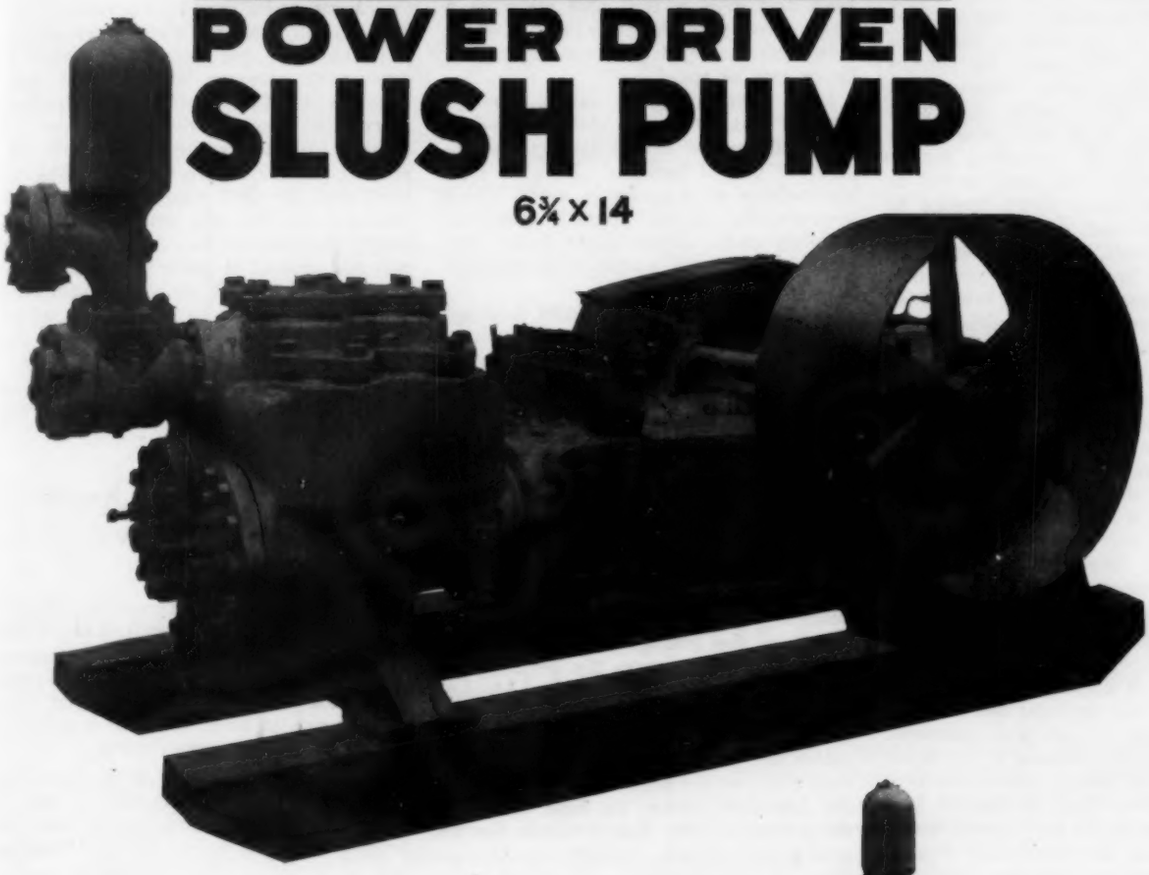
The first wells in any field are pumped from the beam after standardizing, but after a lease has been developed, all wells are pumped by an ordinary pumping jack operated from a "power." From 15 to 25 wells are often pumped in this manner, making lifting costs relatively low.

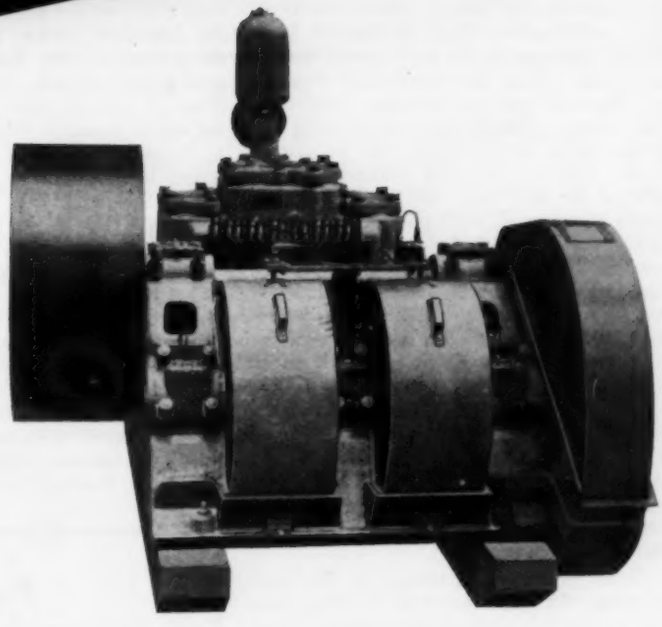
The following figures give a general idea of costs for wells of various depths ready to be standardized. It is to be understood that these estimates are rather generous and these figures may be cut materially by experienced operators. Economies may be effected by skidding derricks from one location to another and on the time required for drilling during the development of a field. These prices include actual costs for the time allowed and give a suf-

(Continued on page 242.)

[5]Conditions with respect to water problems vary with the different pools. In some fields wells not necessarily the highest structurally may be drilled 10 and 15 feet into the sand, and water will not appear for several months. On the other hand, in pools like the Oil Investment and T. B. Wilson (Waite Phillips) only a foot or two of sand may be drilled before water is encountered.

IDEAL
POWER DRIVEN
SLUSH PUMP
6¾ X 14





1. TOTALLY ENCLOSED.
2. DOUBLE STUFFING BOX TO EXCLUDE MUD FROM CROSS-HEAD.
3. CONTINUOUS HERRINGBONE CUT GEARS.
4. FORCE FEED LUBRICATION.

THE NATIONAL SUPPLY COMPANIES

Say you saw it in The OIL WEEKLY

Oil Scouting As It Used to Be

(Continued from page 134.)

tracted for at Spindletop at three cents a barrel.

Growth of Beaumont

But the rabble stayed on and helped "develop" Beaumont. The town needed considerable development. The first of January, 1901, it had been a contented burgh of about 3,000 souls. By June it had 35,000 people. Living conditions had become almost indescribable. Oil went down but meals went up. Meals cost from $2.50 to $10.00, depending not so much on the quality of food served as the place. The lower figure applied to sidewalk stands and grub wagons, the higher to the hotels, which were screened and which at least strained your flies for you. Fortunately it was summer so that folks slept outdoors, almost any and everywhere, in tents, under trees, and along the country roads.

Beaumont's main business thoroughfare was unpaved when the caravans began to arrive. It soon proved unequal to the traffic that flowed over it, yet time would not permit of closing it so it could be paved. And so it was that a plank causeway was built over it. The same thing was done at Spindletop, four miles south of Beaumont.

I have just referred to the tumble that occurred in the price of oil soon after the advent of Spindletop. There was really nothing to do with the oil. Until that time, the only practical use that had ever been made of oil that consumed large quantities was refining it for Kerosene for use in lamps. But Spindletop alone was sending forth enough to light all the lanterns in the million-odd homes of China. Too, the mechanical side of the business was not keeping time with the needs. There was no pipeline in Texas then, save a short one at Corsicana. The oil from the Beaumont wells gushed up and ran out onto the rich fields, forming gigantic pools. It was the latter part of 1901 before the situation was got in hand. Necessity often creates new outlets. It was dicovered that oil made an excellent fuel, or rather this was known prior to the gigantic production at Spindletop, but it was only after the flooding of the oil market at Beaumont that oil began to be used widely as fuel in steam plants. By the end of the year, the price climbed up to $1.00 a barrel, and soon a pipeline, constructed from the Beaumont fields to Port Arthur, made it possible to save the oil and actually market it.

Soon the railroads, several of the large systems, changed from coal to oil burners, the automobile came along to utilize gasoline that up to that time was a by-product that was entirely wasted, seagoing vessels found that oil made a better fuel than coal, and a few years later, oil began to be used widely for cooking purposes.

Oil scouting was somewhat different back in the early days the Texas developrvent from what it now is. The main difference is, I should say, that it is more "refined" now than then. Conditions in the early Corsicana days and in the Beaumont and Tulsa days were "crude" in more ways than one. Some of these have been indicated. Take the matter of locomotion. I recall fording the Arkansas River in a buggy, drawn by a mule, when Tulsa field was coming in. I was glad to get there behind old Beck and over a trail that today is a highly developed highway along which motor cars whiz at a mile-a-minute and better rate of speed.

It is interesting to reflect on the changes that have come about in modern life that are due chiefly to the development of the oil business. Back in 1900, automobiles were probably minus terms in even the bigger Texas towns, and certainly even a few years later, they attracted as much attention as a circus parade.

From the time the Corsicana field opened until Spindletop got under way, there was only one distributing oil company in the state of Texas. That was the Waters-Pierce Oil Company, of St. Louis, distributors of all oil of Arkansas, Louisiana, Texas, Oklahoma, and New Mexico. There is more gasoline sold now daily in San Antonio than in all that territory during a day's time before the motor car became the commonplace mode of transportation that it now is.

Of course, the development of the oil business has made possible the great increase in the number of motor driven vehicles, and vice versa the development of the automotive business has boomed the oil business. Back in 1900 automobiles were novelties, not nearly so marvelous are airplanes to us today as motor cars were to the populace then. During the last thirty years, we have witnessed the advent of the use of oil as motive power for sea-going vessels, for various types of vehicles used on land, and lastly for aerial vessels. What next, or is there to be any next? We leave it to the oil scouts of the future.

Leather Products Company Makes New Valve Cup

The Kendall Leather Products Company of 134 North Franklin Street, Chicago, has developed a new construction valve cup for oil wells. This cup is the same patented construction as the Kendall Cup for air brake cylinders, which has been thoroughly tested out by the American Railway Association and passed by that association as standard equipment for air brakes.

This construction is a layer of very heavy canvas, to which is cemented on each side, a layer of chrome tanned leather. The cement used is oil and water proof. The leather is cemented to the canvas under very high pressure. This high pressure expands the leather and as a consequence the expanded leather is continually exerting itself to get back into its original state. This pulling forces the flange of the cup against the cylinder walls and makes it practically impossible for the cup to collapse. The cement and the duck supply the necessary firmness for the cup, while the chrome leather wearing surface is comparatively soft and instead of being immediately cut by sand and grit, it allows the sand and grit to imbed itself in the leather, which adds very materially to the life of the cup.

Further information with samples of these cups can be secured by writing the company.

International Opens Three New Stores

Tulsa, Oklahoma.—International Supply Company, with general offices here and branches throughout the oil country, have opened three new stores in Texas. A branch has been established at McCamey, one at Isom and also a store at Spearman, in that state.

"Smoky" Baker will be in charge of the International store at McCamey and J. C. Smith will have supervision over the branch at Isom, while W. E. Wheeler will be in charge of the Spearman store.

Character of Crude Discourages Line Construction to Panhandle

(Continued from page 136.)

tinent fields, and does not congeal at low temperatures as does Panhandle crude.

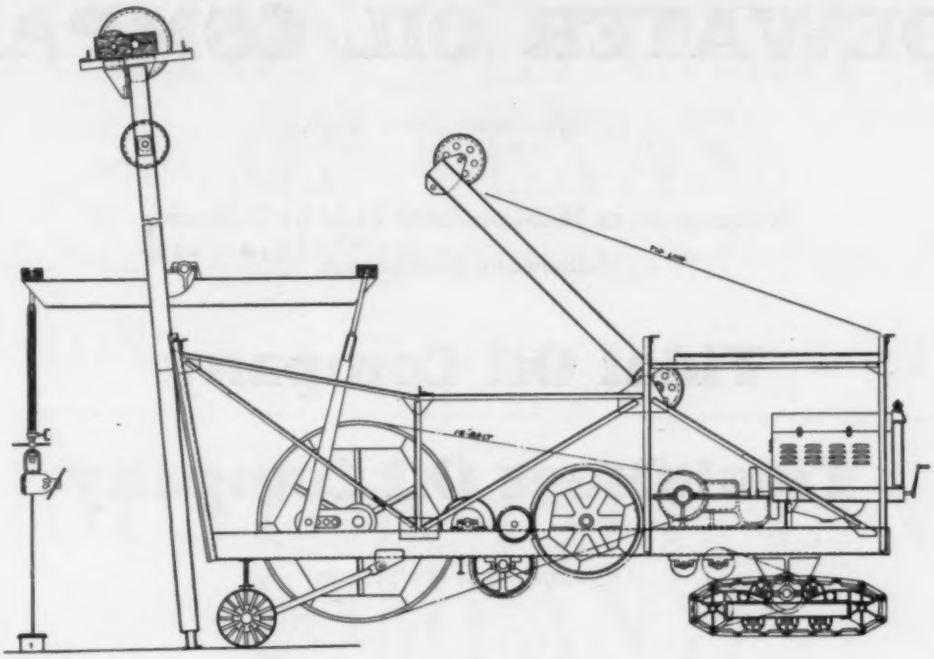
The Sinclair purchases are moved to Houston via tank cars at 20 cents per hundred pounds.

The only line handling production in Wheeler County is the J. D. Wrather line from the Whittington field to Lela. It is nine miles of four-inch, and five miles of two-inch and three-inch which make connections to all the production in the field.

Pipe Lines in Panhandls Field

Company Location—	Miles	Size
Bartex Pipe Line Co. (Phillips Pet. Co.) Hutchinson County to Panhandle	22	4
PPhillips Petroleum Co. (gasoline line), Hutchinson County to Panhandle..	30	3
Gulf Pipe Line Company, Hutchinson County to Panhandle.....	35	8
Humble Pipe Line Company, Hutchinson County to Burnett Ranch....	10*	8
Magnolia Pipe Line Company, Hutchinson County to Kings Mill.....	20½	6
Marland Pipe Line Company, Hutchinson County to Panhandle.....	35	8
Pantex Pipe Line Company, Hutchinson County to Amarillo.....	45	6
Plains Pipe Line Company, Hutchinson County to Panhandle.....	30	6
Prairie Pipe Line Company, Hutchinson County to Kings Mill.....	22*	8
Sinclair Crude Oil Purchasing Co., Gray County to Pampa.....	6	4
J. D. Wrather Pipe Line Company, Wheeler County to Lela.....	9	4

*Under construction.



"UNITED" SPARTA DRILLING MACHINE
—FOR BOTH DRILLING AND CLEANING OUT!

THE "United" Sparta Drilling Machine is built tractor-type, with either round or caterpillar drive wheels, operated by gas or gasoline engine—and combines all the satisfactory principles of both the small spudding rig and standard drilling rig. It is recommended for drilling in any formation to a depth of 1500 feet, wells to finish up to 6⅝-inch—and for cleaning out, etc., to a depth of 3000 feet.

The "United" Sparta Drilling Machine permits drawing tools from hole up to 400 feet per minute; sand reel speed of up to 750 feet per minute—and also permits a rapid speed in cleaning out.

The steel Mast is 50 feet high with one bolted joint. Can be loaded in 40-foot car. Unnecessary to unjoint mast when moving in field.

FREE BULLETIN TELLS ALL

The "United" Sparta Drilling Machine is a real spudding and drilling machine operated by a 50 H. P. motor. It has a steel frame, steel mast and is equipped with a real Bull Wheel, Calf Wheel and Sand Reel. Other features—too numerous to mention. Bulletin tells all—and we suggest you.

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Tidal-Osage Oil Company

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and

Manufacturers of Natural Gasoline

Tidewater Oil Sales Corporation

National Distributors of

VEEDOL LUBRICANTS

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Say you saw it in The OIL WEEKLY

HOUSTON OIL COMPANY OF TEXAS

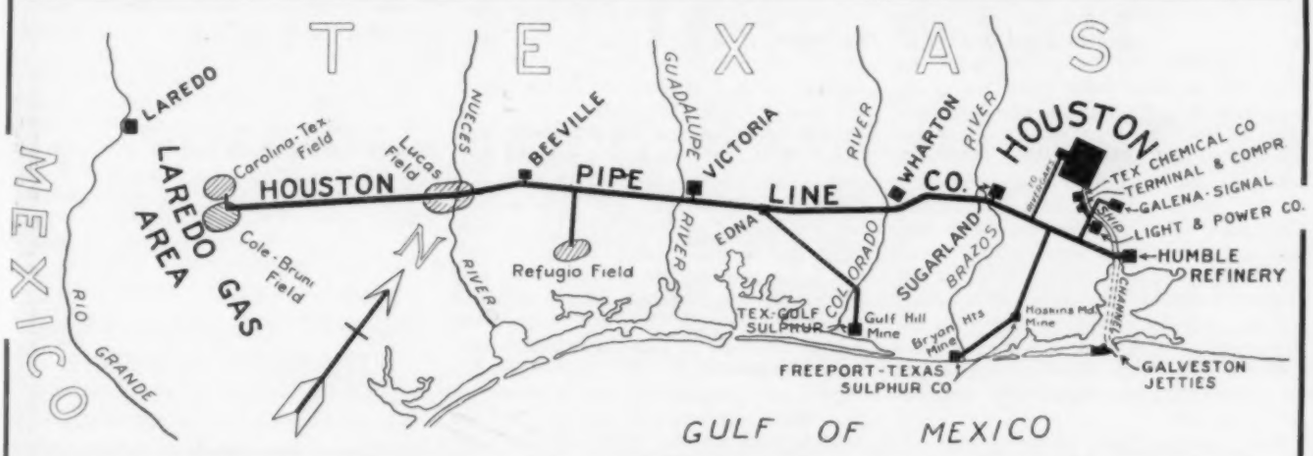
Producers and Refiners of Crude Petroleum

HOUSTON TEXAS

HOUSTON PIPE LINE COMPANY

Wholesalers of Natural Gas

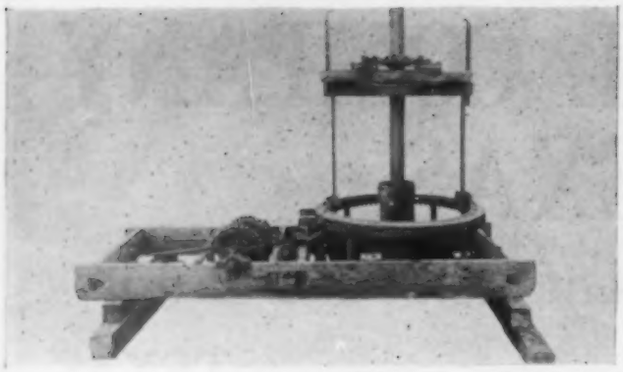
HOUSTON TEXAS



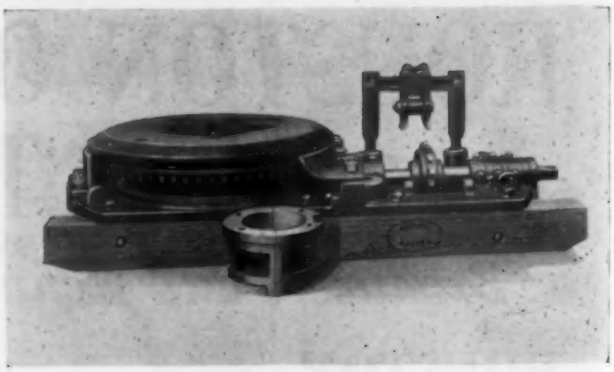
HOUSTON NATURAL GAS COMPANY

Distributors of Natural Gas

HOUSTON TEXAS



Type of First Rotary



American Gumbo Buster

Old Machine Shows Development in Rotary Equipment

That rotary drilling equipment has undergone much change in its evolution may be seen from a comparison of the two pictures herewith. The old machine is a likeness of the first rotary machine invented, and the new rotary is the well known Gumbo Buster, manufactured by the American Well and Prospecting Company, Corsicana, Texas.

The old machine was invented by M. C. and C. E. Baker, at Mitchell, South Dakota, in 1887 and 1888. These two brothers were engaged in drilling shallow water wells. Being unable to operate successfully in that formation with the method of drilling then in use, they turned their attention to the discovery of a new method that would overcome the difficulties. After many unsuccessful experiments they conceived the essential ideas of the rotary method as it is practiced today and had a machine built with which to carry out their ideas, according to the American Well and Prospecting Company. This machine proved a success and several wells were drilled with it.

The company goes on to state that the rotary method of drilling until this time had never been heard of, but with the invention of this new machine, several companies came into existence and began to manufacture and experiment with rotary machines.

Chief among these concerns was the American Well and Prospecting Company of Corsicana, Texas. This company secured the services of the Baker brothers, who were with the company until their death, and by the time of the Spindletop boom, in 1901 and 1902, the concern was actively engaged in the manufacture and introduction of rotary machinery.

The American Well and Prospecting Company is credited with the discovery of oil at Corsicana, and drilled many shallow wells by the rotary method, over the territory where the Powell field now is.

Since that time the company has continued to develop and manufacture rotary machinery.

The Gumbo Buster line of rotaries, draw-works, engines, blocks, pumps, etc., are sold exclusively by the Republic Supply Company, Houston, Texas.

Second Gray County Well Is Flowing 1500 Barrels

Amarillo, Texas.—The Wilcox-Pampa field in Gray County scored its second large flowing well when the Shamrock Petroleum Company et al's Worley-Reynolds 1 flowed 1500 barrels natural with heavy gas pressure from sandy-lime and granite wash pay formation at 3000-28 feet. This well is located in the southeast corner of the northwest quarter of section 83, and is one mile from the nearest oil production. The initial performance of this well indicates that considerable new production can be expected in the field within the next six weeks from the numerous tests now drilling on nearby leases.

The Shamrock producer flowed 840 barrels of 41.7 gravity at 52 degrees F. oil with three million cubic feet of gas Friday from pay at 3000-09 feet, with most of the gas coming from the first three feet of the pay. The well was holding at 35 barrels per hour natural when deepened to 3028 feet several days later, and the flow jumped to 64 barrels per hour natural, but the last nine feet of formation penetrated did not influence the flow of oil. This well logged the top of the lime at 2338 feet, with a surface elevation of 3225 feet. Humble Pipe Line Company connected up to the flow tanks, and is running the oil to a loading rack on the Santa Fe Railroad, near the town of Pampa, for delivery to the Gulf Coast.

The production of this new Wilcox-Pampa field well determines if Eddie Jones drilling contractor and operator, gets another $100,000 cash payment from the Atlantic Oil Producing Company. Jones was 50-50 with the Shamrock Petroleum Company on 1358 acres of leases in and near the field, including the quarter section of land on which the big well is located, and on July 2 sold a half of his net interest, or one-fourth of the interest in the acreage, to Atlantic for $100,000, with Atlantic agreeing to pay Eddie another $100,000 cash bonus if the Worley-Reynolds 1 made an average of 2000 barrels of oil daily for five consecutive days within 30 days after tapping the pay. A well placed shot in this well within the next few weeks may be worth $100,000 to Jones. Atlantic is reported to be making arrangemens to enter the Wilcox-Pampa field with a crude gathering system, with a tank car loading rack at Pampa to ship crude to its Philadelphia refinery via tank cars to Atreco, near Beaumont, thence in tankers to the plant.

The Wilcox-Pampa field has a total of 70 operations listed on field reports, including outlying wildcats in Gray County, and is the most popular with the operators of all the producing areas in the Texas Panhandle for the reason that the oil is above 40 gravity, and virtually free from congealing troubles during winter months, while drilling is much cheaper when using combination rigs. Rotary rigs are moving into the field every day from distant points, and the shortage of rotaries lately has caused some of the companies to use cable tools, although the rotary was preferred. Humble and Sinclair are serving the field with gathering lines, while Texas, Magnolia and Gulf are scheduled to enter shortly to handle their own production.

New Production Depth Record at Lockport

Houston, Texas.—Vacuum Oil Company lowered the production depth in the Gulf Coast territory 564 feet when its Freiberg & Wolfe No. 1 at Lockport, Louisiana, started flowing wild July 26 at a rate of 750 barrels 31.3 Baume gravity oil and 40,000,000 feet of gas from a total depth of 5496 feet. The well was brought under control Monday night, and was expected to turn a better oil producer when the gas flow subsided.

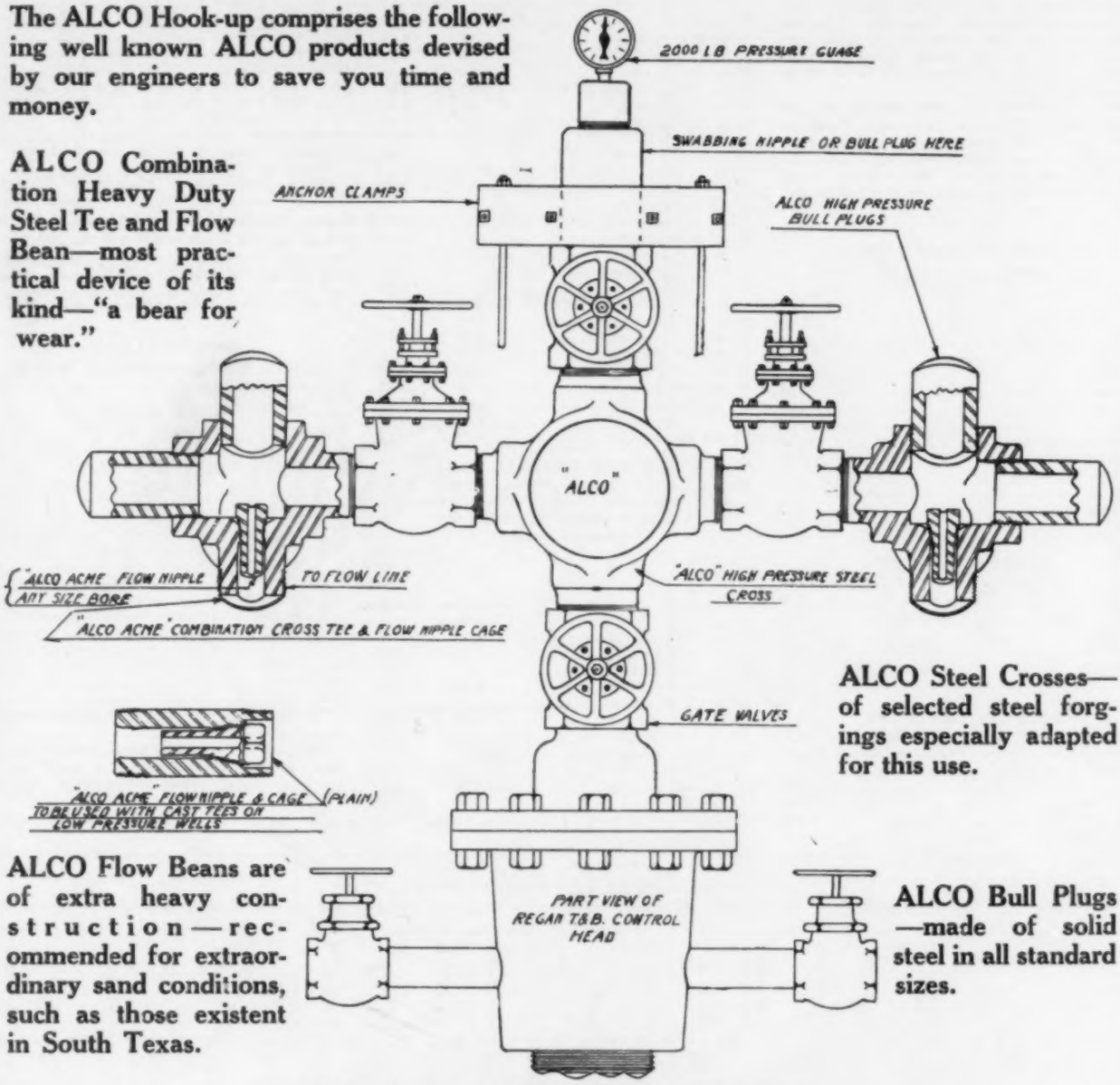
The Freiberg & Wolfe 1 extends Lockport 750 feet to the southwest. The well came in while the crew was pulling the drill stem to set screen. Strong gas pressure blew 21 fourbles of drill stem from the hole and wrecked the derrick.

It was a workover well, having been a 50-barrel pumper at 2458 feet. It makes the eleventh producer at Lockport and brings production to more than 4500 barrels daily.

Standardize on ALCO "Christmas Tree" Hook-up

The ALCO Hook-up comprises the following well known ALCO products devised by our engineers to save you time and money.

ALCO Combination Heavy Duty Steel Tee and Flow Bean—most practical device of its kind—"a bear for wear."


2000 LB PRESSURE GUAGE
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ALCO HIGH PRESSURE BULL PLUGS
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"ALCO ACME" FLOW NIPPLE ANY SIZE BORE
TO FLOW LINE
"ALCO" HIGH PRESSURE STEEL CROSS
"ALCO ACME" COMBINATION CROSS TEE & FLOW NIPPLE CAGE
GATE VALVES
"ALCO ACME" FLOW NIPPLE & CAGE (PLAIN) TO BE USED WITH CAST TEES ON LOW PRESSURE WELLS
PART VIEW OF REGAN T&B. CONTROL HEAD

ALCO Steel Crosses—of selected steel forgings especially adapted for this use.

ALCO Flow Beans are of extra heavy construction—recommended for extraordinary sand conditions, such as those existent in South Texas.

ALCO Bull Plugs—made of solid steel in all standard sizes.

If It's An ALCO It's Modern

We Also Manufacture—

ALCO "Brown" Safety Slide	ALCO Set Slide Valve Stem
ALCO Swedge Nipples	ALCO Grease Cups
ALCO Core Drill	ALCO Flexible Swab
ALCO Drill Pipe Float Valve	ALCO Sucker Rod Couplings

WRITE FOR FURTHER DETAILS TO

ALCO OIL TOOL COMPANY

Cor. South Park and Main Sts., Compton, Calif.

South Texas Representative: Elliott Core Drilling Co., 3210 Harrisburg Blvd., Houston, Texas
New York Representative: Regan Forge & Engineering Co., Evening Post Bldg., New York City

CRUDE OIL PRICE QUOTATIONS

Crude Price Changes

July 25.—Effective at the opening of the market today, Standard Oil Company of Louisiana posted a revision of gravity and a cut on Caddo heavy crude. This cut was met by the Louisiana Oil Refining Company and the Magnolia Petroleum Company. The revision in gravity schedule included a posting on from below 26 to 31.9, under heavy oil, with a posting of $1.40 on below 26, $1.55 on 26 to 28.9, and $1.70 on 29 to 31.9.

July 24.—Effective at the opening of the market today, Magnolia Petroleum Company added three new gravity grades to its Pine Island, Louisiana, district posting. These include below 26, 26 to 28.9, and 29 to 31. Price on these three new grades were $1.40, $1.55 and $1.70.

Current Postings

EASTERN STATES

	July 27 1926
New York Transit	3.40
Bradford District	3.40
National Transit	3.30
Southwest	3.30
Eureka	3.25
Macksburg	3.05
Gaines	2.85
Somerset medium	2.50
Somerset light	2.65
Cabell	2.40
Ragland	1.25
Corning	2.55
Keister	2.30

CENTRAL STATES

Illinois	2.37
Indiana	2.25
Lima	2.48
Plymouth	1.96
Princeton	2.37
Waterloo	1.35
Wooster	2.55

WESTERN KENTUCKY

Posted by Indian Refining Company for crude from Allen, Warren, Franklin, Davies, Barren, Cumberland and Monroe Counties

36 and above	2.05
33 to 35.9	1.95
32.9 and below	1.85

MID-CONTINENT

	Prairie Sinclair* Texas Gulf	July 27 1926 Magnolia
Below 28	...	1.30
28 to 28.9 gravity	1.65	1.65
29 to 29.9 gravity	1.73	1.73
30 to 30.9 gravity	1.81	1.81
31 to 31.9 gravity	1.89	1.89
32 to 32.9 gravity	1.97	1.97
33 to 33.9 gravity	2.05	2.05
34 to 34.9 gravity	2.13	2.13
35 to 35.9 gravity	2.21	2.21
36 to 36.9 gravity	2.29	2.29
37 to 37.9 gravity	2.37	2.37
38 to 38.9 gravity	2.45	2.45
39 to 39.9 gravity	2.53	2.53
40 to 40.9 gravity	2.61	2.61
41 to 41.9 gravity	2.69	2.69
42 to 42.9 gravity	2.77	2.77
43 to 43.9 gravity	2.85	2.85
44 to 44.9 gravity	2.93	2.93
45 to 45.9 gravity	3.01	3.01
46 to 46.9 gravity	3.09	3.09
47 to 47.9 gravity	3.17	3.17
48 to 48.9 gravity	3.25	3.25
49 to 49.9 gravity	3.33	3.33
50 to 50.9 gravity	3.41	3.41
51 to 51.9 gravity	3.49	3.49
52 and above	3.57	3.57

NORTH AND CENTRAL TEXAS

Ranger, North Texas, Mexia, Powell, Richland, Wortham, Lytton Springs, Currie, Moran, Somerset, Big Lake and Nocona crude

	Somerset (Grayburg)	Humble O. & R. Co. * Texas Co.
28 to 28.9 gravity	1.15	1.65
29 to 29.9 gravity	1.25	1.73
30 to 30.9 gravity	1.31	1.81
31 to 31.9 gravity	1.39	1.89
32 to 32.9 gravity	1.47	1.97
33 to 33.9 gravity	1.55	2.05
34 to 34.9 gravity	1.63	2.13
35 to 35.9 gravity	1.71	2.21
36 to 36.9 gravity	1.79	2.29
37 to 37.9 gravity	1.87	2.37
38 to 38.9 gravity	1.95	2.45
39 to 39.9 gravity	2.01	2.53
40 to 40.9 gravity	2.07	2.61
41 to 41.9 gravity	2.13	2.69
42 to 42.9 gravity	2.19	2.77
43 to 43.9 gravity	2.25	2.85
44 to 44.9 gravity	2.31	2.93
45 to 45.9 gravity	2.31	3.01
46 to 46.9 gravity	2.31	3.09
47 to 47.9 gravity	2.31	3.17
48 to 48.9 gravity	2.31	3.25
49 to 49.9 gravity	2.31	3.33
50 to 50.9 gravity	2.31	3.41
51 to 51.9 gravity	2.31	3.49
52 and above	2.31	3.57

Corsicana Heavy $1.25 per barrel, posted by Magnolia.

***Until further notice, Ranger, North Texas, Mexia, Powell, Richland, Wortham, Lytton Springs, Currie, Moran and Nocona crudes purchased by the Humble Oil and Refining Company, of a gravity lower than 28 degrees will be paid for with a corresponding decrease of eight (8) cents per barrel for each lower degree of gravity.**

SOUTH TEXAS

Posted by Humble, Texpata and Magnolia.

Mirando	1.25

GULF COAST

Grade "A" all companies	1.60
Grade "B"	1.50
Gulf Coast Light Oil, Below 25	1.50
25 to 25.9	1.55
26 to 26.9	1.60
27 to 27.9	1.65
28 to 28.9	1.70
29 to 29.9	1.75
30 to 30.9	1.80
31 to 31.9	1.85
32 to 32.9	1.90
33 to 33.9	1.95
34 to 34.9	2.00
35 to 35.9	*2.05
36 to 36.9	2.10
37 to 37.9	2.15
38 to 38.9	2.20
39 to 39.9	2.25
40 and above	2.30

***Humble Oil and Refining Company's postings on Gulf Coast Light stop at 35 to 35.9. Its price on all crude above 35 is $2.05 per barrel.**

(Continued on page 188.)

California Crude Oil Prices at the Well

Following are the current prices offered by Standard Oil Company for crude oil at the well: (Price per barrel of 42 gallons in fields indicated)

Gravity (degrees)	Signal Hill	Huntington Beach	Inglewood	Olinda-Brea Canon	Rosecrans Dominguez	Torrance	Richfield	Whittier	La Habra	Montebello	Coyote Hills	Santa Fe Springs	Newhall	Midway-Sunset Elk Hills	McKittrick	Lost Hills	Coalinga	Kern River	Wheeler Ridge
14-14.9	$ .85	$ .85	$ .85	$ .85	$ ..	$ .85	$ .85	$ .85	$ .85	$ .85	$ .85	$ ..	$ .75	$ .75	$ .75	$ .75	$ .75	$ .75	$ .75
15-15.9	.87	.87	.87	.87	..	.87	.87	.85	.85	.85	.85	..	.75	.75	.75	.75	.75	.75	.75
16-16.9	.90	.90	.90	.90	..	.90	.90	.85	.85	.85	.85	..	.75	.75	.75	.75	.75	.75	.75
17-17.9	.94	.94	.94	.94	..	.94	.94	.85	.85	.85	.85	..	.75	.75	.75	.75	.75	.75	.75
18-18.9	.98	.98	.98	.98	..	.98	.98	.86	.86	.86	.86	..	.75	.75	.75	.75	.75	.75	.75
19-19.9	1.04	1.04	1.04	1.04	..	1.04	1.04	.87	.87	.87	.87	..	.75	.75	.75	.75	.75	.75	.75
20-20.9	1.10	1.10	1.10	1.10	..	1.10	1.10	.89	.89	.89	.90	..	..	.82	..	.82	.79	..	.78
21-21.9	1.16	1.16	1.16	1.16	..	1.16	1.16	.91	.91	.91	.98	..	..	.90	..	.90	.86	..	.81
22-22.9	1.22	1.22	1.22	1.22	..	1.22	1.22	.94	.94	.94	1.06	..	..	1.00	..	1.00	.93	..	.85
23-23.9	1.28	1.28	1.28	1.28	..	1.28	1.28	..	..	.97	1.14	..	..	1.11	..	1.11	1.00	..	.89
24-24.9	1.34	1.34	1.34	1.34	1.34	1.34	1.34	..	..	1.01	1.22	1.02	..	1.22	..	1.22	1.07	..	.93
25-25.9	1.40	1.40	1.40	1.40	1.40	1.40	1.40	..	..	1.05	1.30	1.08	..	1.33	..	1.33	1.14	..	.97
26-26.9	1.46	1.46	1.46	1.46	1.46	1.46	1.46	..	..	1.09	1.38	1.16	..	1.44	..	1.44	1.21	..	1.01
27-27.9	1.52	1.52	1.52	1.52	1.52	1.52	1.52	..	..	1.13	1.46	1.24	..	1.55	..	1.55	1.28	..	1.05
28-28.9	1.58	1.58	1.58	1.58	1.58	1.58	1.58	..	..	1.17	1.54	1.32	..	1.66	..	1.66	1.35	..	..
29-29.9	1.64	1.64	..	1.64	1.64	..	1.64	..	..	1.21	1.62	1.40	..	1.77	..	1.77	1.42	..	..
30-30.9	1.70	1.70	..	1.70	1.70	..	1.70	..	..	1.25	1.70	1.48	..	1.88	..	1.88	1.49	..	..
31-31.9	1.76	1.76	..	..	1.76	..	..	..	..	..	..	1.60	..	1.99	..	1.99	1.56	..	..
32-32.9	1.84	1.84	..	..	1.84	..	..	..	..	..	..	1.72	..	2.10	..	2.10	1.63	..	..
33-33.9	..	..	..	..	1.92	..	..	..	..	..	..	1.84	..	2.21	..	2.21	1.70	..	..
34-34.9	..	..	..	.	2.00	..	..	..	..	..	..	1.96	..	..	..	2.32	1.77	..	..
35-35.9	..	..	..	..	2.08	..	..	..	..	..	..	2.08	..	..	..	..	1.84	..	..
36-36.9	..	..	..	..	2.16	..	..	..	..	..	..	2.16	..	..	..	..	..	..	..
37-37.9	..	..	..	..	2.24	..	..	..	..	..	..	2.24	..	..	..	..	..	..	..
38-38.9	..	..	..	..	2.34	..	..	..	..	..	..	2.31	..	..	..	..	..	..	..
39-39.9	..	..	..	..	2.44	..	..	..	..	..	..	2.44	..	..	..	..	..	..	..
40-40.9	..	..	..	..	2.54	..	..	..	..	..	..	..	..	..	..	..	..	..	..
41-41.9	..	..	..	..	2.64	..	..	..	..	..	..	..	..	..	..	..	..	..	..
42-42.9	..	..	..	..	2.74	..	..	..	..	..	..	..	..	..	..	..	..	..	..

¶ THE SINCLAIR LAW OF LUBRICATION ¶ For every machine ¶ of every degree of wear ¶ there is a scientific Sinclair Oil ¶ to suit its speed and seal its power

SINCLAIR OILS
REG. U.S. PAT. OFF.

WAR on WASTE!

WITH the Law of Lubrication, Sinclair dealers make war on wasteful methods of lubrication which lessen the power and lower the value of automobile engines.

Introduce in your community this common-sense method of recommending the right grade of Sinclair Opaline Motor Oil—a simple and valued method which means more gallonage for you because it makes more satisfied car owners. *Why sell just "oil"?* Why not sell correct lubrication for economical transportation, scientifically based on the wear of the engine at its present mileage condition?

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45 Nassau Street, New York
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SINCLAIR OPALINE MOTOR OIL
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LULING

	July 27 1926
Based on Contract	1.30

TEXAS PANHANDLE

Posted by Magnolia, Kay County Gas Company, Gulf and Plains Pipe Line Company, and Humble Oil and Refining Company.

28 to 28.9 gravity	$1.35
29 to 29.9 gravity	1.40
30 to 30.9 gravity	1.45
31 to 31.9 gravity	1.50
32 to 32.9 gravity	1.55
33 to 33.9 gravity	1.60
34 to 34.9 gravity	1.65
35 to 35.9 gravity	1.70
36 to 36.9 gravity	1.75
37 to 37.9 gravity	1.80
38 to 38.9 gravity	1.85
39 and above	1.90
(Humble Oil and Refining Company Only)	
39 to 39.9 gravity	1.90
40 to 40.9 gravity	1.95
41 to 41.9 gravity	2.00
42 to 42.9 gravity	2.05
43 to 43.9 gravity	2.10
44 and above	2.15

WYOMING-MONTANA

Wyoming

Byron	2.25
Ferris	1.53
Elk Basin	2.40
Grass Creek	2.40
Rock Creek	2.40
Lost Soldier	1.10
Lance Creek	2.40
Mule Creek	1.75
Notches	.65
Big Muddy	2.25
Osage	2.15
Hamilton Dome	.73
Pilot Butte	1.75
Torchlight-Greybull	2.15
Lander	1.10

Salt Creek (Midwest Refining Company)

	July 27 1926
29 to 29.9 gravity	1.73
30 to 30.9 gravity	1.81
31 to 31.9 gravity	1.89
32 to 32.9 gravity	1.97
33 to 33.9 gravity	2.05
34 to 34.9 gravity	2.13
35 to 35.9 gravity	2.21
36 to 36.9 gravity	2.29
37 to 37.9 gravity	2.37

Montana

Sunburst	1.05
Cat Creek	2.15

NEW MEXICO

Artesia	1.95
Hogback	1.95

CANADIAN CRUDE

Oil Springs	2.95
Petrolia	2.80

*Bounty on Canadian crude is ¾ cent per gallon, or 26½ cents per barrel

LOUISIANA-ARKANSAS

Caddo Light

38 gravity and above	2.45
35 to 37.9 gravity	2.35
32 to 34.9 gravity	2.25
*Below 32 gravity	2.10

Caddo Heavy

Below 26.0	1.40
26 to 28.9	1.55
29 to 31.9	1.70

Homer

35 gravity and above	2.20
33 to 34.9 gravity	2.10
31 to 31.9 gravity	2.00
Below 31 gravity	1.85

Cotton Valley

All Grades	1.20

Haynesville

33 gravity and above	2.10
Below 33 gravity	2.00

Pine Island (Posted by Magnolia)

	July 27 1926
Below 26	1.40
26 to 28.9	1.55
29 to 31	1.70
32 to 34.9	2.25
35 to 37.9	2.35
38 and above	2.45

Bull Bayou

38 gravity and above	2.25
35 to 37.9 gravity	2.10
32 to 34.9 gravity	1.95
De Soto crude	2.30
Crichton	2.10
Bellevue	1.50
Jennings	1.50
Vinton	1.50
Edgerly crude	1.50
Urania	1.25

Smackover (Standard, Gulf, Louisiana, Shreveport-El Dorado and Atlanta)

27 and above	1.50
26 to 26.9 gravity	1.45
25 to 25.9 gravity	1.40
24 to 24.9 gravity	1.35
Below 24 gravity	1.10

The Texas Company

27 and above	1.50
26 to 26.9 gravity	1.45
25 to 25.9 gravity	1.40
24 to 24.9 gravity	1.30
Below 24 gravity	1.10

El Dorado and Lisbon (Atlantic)

37 and above at 60 degrees	2.30
35 to 36.9 gravity	2.20
33 to 34.9 gravity	2.10
Below 33 gravity	2.00
East Field (Calion)	.95

Stephens District

26 gravity and above	1.65
Below 26 gravity	1.45

*The Texas Company's posting on below 32 gravity is $1.85.

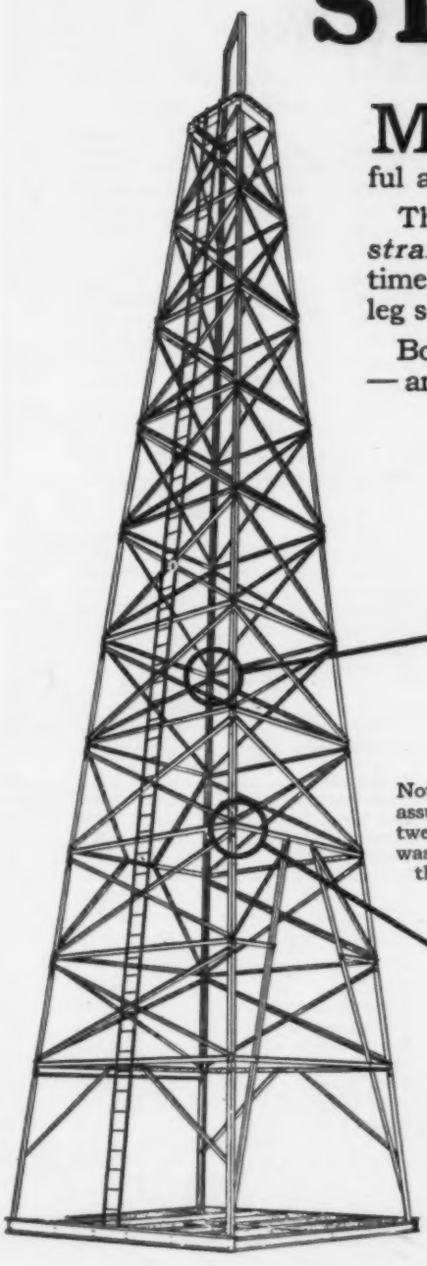
HILL'S FIREPROOF COVER and CONDENSER for STORAGE TANKS

This view shows the method of installing on old tanks with leaky roofs. The copper condenser is 8 ft. in diamter and 8 in. deep, placed as shown at the apex of tank. The whole roof is then covered with asphalt, cemented to old structure and made absolutely gas tight, thereby forcing all gases to pass through the submerged copper tubes, condensing the gasoline content and returning it to oil in the tank. The fixed gases that cannot be condensed are forced to bubble up through the water and absolutely protect the oil from danger of fire. Complete drawings and full information sent promptly on request. We are prepared to install subject to your approval.

Manufactured and Sold By

FIREPROOF TANK COVER AND CONDENSER CO., P. O. Box 882, Tulsa, Okla., U. S. A.

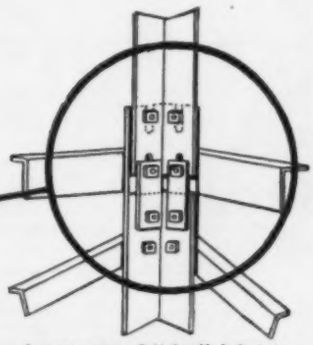
PARKERSBURG STEEL DERRICKS



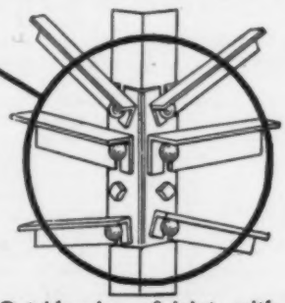
MUCH of the exceptional strength and rigidity of Parkersburg Steel Derricks are due to the "slotted" joint — proved successful and perfected during *sixteen years of actual oilfield service.*

There are no shearing strains on the bolts — loads are carried *straight* down the derrick legs. The derrick settles completely at time of erection. There's a "butt-to-butt" contact between adjoining leg sections.

Bolts and nuts need never be removed for dismantling or re-erecting — another feature of the "slotted" joint!



Note advantages of "slot" joint to assure "butt-to-butt" contact between leg sections. Positive lock washer with each bolt — you tighten the nut, and the joint is secure

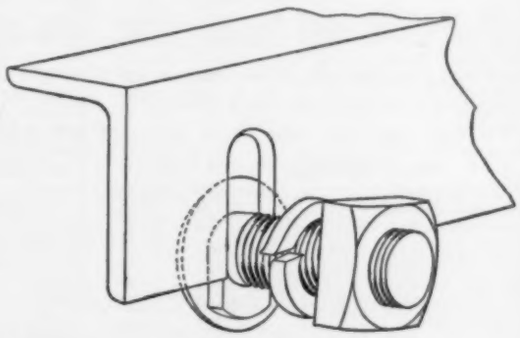


Outside view of joint, with girts and braces in position. The square-headed bolts are "shop-bolts"

When derrick is first erected, bolts are inserted and nuts started by the "ground" man. Men in the rig merely place the derrick members and tighten the nuts — there's no time lost inserting bolts and starting nuts while holding the derrick members in place.

"It's the stiffest derrick on the market!" is the opinion of veteran rig builders after they've tried to shake it from the top section, the severest test for a newly-erected derrick!

Specifications are yours for the asking



The "one-wrench" bolt is another feature of Parkersburg Steel Derricks. The slot fits over the lug under the bolt head. The bolt cannot turn — tightening nuts on a Parkersburg Derrick is a "one-wrench" job!

The PARKERSBURG RIG & REEL COMPANY

Main Office and Works, Parkersburg, W. Va. ***New York Office,*** 30 Church St.

California Representatives, BUCK & STODDARD
485 California St., San Francisco, Calif.; Box 720 Arcade Station, Los Angeles, Calif.

District Offices and Distributing Warehouses from which Parkersburg Service is available

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*Tulsa
Bristow
Drumright
Hominy
Holdenville
Okemah
Tonkawa
Wilson
Shidler
Wetumka
Wewoka

ARKANSAS
*El Dorado
Louann
Smackover

KANSAS
Eldorado
Madison

WEST VIRGINIA
Parkerburg
Clarsburg

COLORADO
Denver

LOUISIANA
*Shreveport
Cotton Valley
West Lake

TEXAS
*Houston
Best
Breckenridge
Corsicana
Dale
Liberty
Orange
Panhandle
Ranger
Wichita Falls

WYOMING
*Casper
†Rawlins

MONTANA
††Kevin

NEW MEXICO
Artesia

*District Offices †Frick-Reid Supply Co. ††Great Northern Tool & Supply Company

Say you saw it in The OIL WEEKLY

AVERAGE DAILY PRODUCTION FOR U.S.

United States Daily Average Production by Weeks

Figures below are taken from the complete revised estimates of the AMERICAN PETROLEUM INSTITUTE except for the current week, which are advance estimates issued by the A. P. I. and are subject to revision:

Week Ending	Oklahoma	Kansas	Texas (Outside Gulf Coast)	Gulf Coast	North Louisiana	Arkansas	Eastern States	Rocky Mountain	California	United States Total
January	449,370	100,130	260,180	90,290	43,990	181,190	101,000	102,300	621,300	1,946,980
February	450,037	101,937	245,989	91,550	45,090	169,676	99,000	98,412	605,250	1,909,637
March	454,762	103,300	260,262	92,712	48,787	165,312	97,625	102,325	604,500	1,929,562
April	467,175	101,825	263,612	88,812	50,562	169,824	100,875	106,675	600.000	1,947,387
May	463,750	105,690	277,700	94,550	58,150	175,430	105,700	112.300	602,720	1,995,990
June	456,450	107,637	302,187	89,912	60,412	167,887	106,250	112,925	606,925	2,013,187
July 3	458,450	109,350	315,450	101,050	60,300	163,650	105,000	114,800	610,400	2,038,450
July 10	453,200	109,500	324,450	112,100	57,550	162,450	104,500	97,100	611,800	2,032,650
July 17	454,200	109,650	331,400	109,050	56,100	162,400	104,500	110,200	616,900	2,054,400
July 24	457,750	111,150	343,050	113,650	57,200	160,750	104,000	108,700	614,700	2,070,950
Increase over past week	3,550	1,500	11,650	4,600	1,100	.....	.....	.....	.....	16,550
Decrease over past week	.....	.....	.....	.....	.....	1,650	500	1,500	2,200	.....

Texas

NORTH TEXAS

	July 24	July 17
Burkburnett	11,800	11,850
Electra	16,400	16,450
Iowa Park and K-M-A	4,450	4,500
Wilbarger	14 800	15,700
Panhandle	73,000	62,000
Petrolia	550	500
Archer County	32,200	32,700
Others	4,650	4,500
Total	157,850	148,200

EAST CENTRAL TEXAS

Mexia	12,800	12 800
Currie	800	800
Richland	1,550	1,600
Corsicana-Powell	27,900	29,900
Wortham	7,200	7,450
Nigger Creek	2,400	2,600
Total	52,650	55,150

WEST CENTRAL TEXAS

Stephens County	11,800	11,800
Eastland County	5,700	5,700
Desdemona	1,750	1,750
Young County	6,750	6,100
Palo Pinto County	450	450
Callahan County	3,500	3,550
Shackelford County	8,750	8,950
Reagan County	29,900	29 800
Others	18,550	19,850
Total	87,150	88,650

SOUTHWEST TEXAS

Luling	22,000	21,700
Mirando	16,000	10,500
Somerset	2,000	2,050
Lytton Springs	4 450	4,400
Piedras Pintas	200	200
Others	550	550
Total	45,400	39,400
Tot'l Tex. outside Gulf Coast	343,050	331,400

GULF COAST

Goose Creek	10,200	8,800
Hull	17,300	17,950
Saratoga	1,350	1,400
Blue Ridge	1,600	750
Damon Mound	900	850
Batson	1,350	1,350
West Columbia	9,050	8,750
Humble	4,050	4,000
Pierce Junction	2,600	2,150
Sour Lake	4,750	5,050
Spindletop	23,900	24,500
Orange County	9,100	9,300
Edgerly	1,050	1,050
Evangeline	1,100	900
Vinton	7,000	7,050
Lockport	4,450	4,200
South Liberty	6,200	6,250
Big Creek	3,450	950
Boling	1,550	1,700
Others	2,700	2,100
Total	113 650	109,050

Oklahoma

	July 24	July 17
North Braman	4,400	3,350
South Braman	8,600	8,750
Blackwell	4,050	4,100
Hubbard	1,850	1,850
Thomas	2,400	2 400
Tonkawa	39,950	37,750
Garber	34,400	33,300
Burbank	44,350	44,050
Osage, outside Burbank	34,300	34,400
Watchorn	2,850	3 000
Cushing	21,650	21,650
Yale Jennings	15,350	15,800
Davenport	8,000	8,500
Bristow-Slick	29,250	29,650
North Okmulgee	17,200	17,450
Lyons-Deaner	4 200	4,200
Stroud	2,000	2,000
Cromwell	16,350	16,600
Papoose	10,100	10,200
Wewoka	32,650	33,350
Duncan District	7,250	7,250
Graham	10,300	10 700
Fox	6,050	5,050
Healdton	14,950	14,750
Hewitt	11,550	11,550
Seminole	6,500	4,800
Others	67,250	67,750
Total	457,750	454,200

California

Santa Fe Springs	50,000	50,000
Long Beach	110,000	109,500
Huntington Beach	45,000	45,000
Torrance	29,500	30,000
Dominguez	21,000	22,000
Rosecrans	16,000	16 000
Inglewood	46,000	47,500
Midway-Sunset	95,000	94,500
Ventura Avenue	40,700	41,400
Others	161,500	161,000
Total	614,700	616,900

North Louisiana

Homer	5 700	5,700
Haynesville	9,800	9,750
Caddo Light	10 900	10,350
Caddo Heavy	2,900	2,800
De Soto, Red River	3,900	3,900
Elm Grove	600	550
Bellevue	2,350	2,350
Cotton Valley	7,700	7,850
Urania	13,350	12,850
Total	57,200	56,100

Kansas

	July 24	July 17
Florence-Covert	1,850	1,800
Peabody Ebling	4,200	4,250
Eldorado-Towanda	14,050	13,900
Augusta-Fox Bush	4,950	5,050
Rainbow Bend	4,050	4,150
Russell	5,250	5 300
Greenwood County	45,650	45,400
Others	31,150	29,800
Total	111,150	109,650

Arkansas

El Dorado	7,750	7,500
Smackover Light	15,200	15,500
Smackover Heavy	123,500	125,100
Stephens	1,800	1,750
Nevada	2,150	2,100
Lisbon	10,350	10,450
Total	160,750	162,400

Mountain States

WYOMING

Salt Creek	48 850	50,250
Grass Creek	3,150	3,250
Elk Basin	850	800
Big Muddy	3,300	3,300
Lost Soldier	5,550	5,550
Rock River	2,800	2,850
Teapot Dome	1,050	700
Others	5,800	5,750
Total	71 350	72,450

MONTANA

Cat Creek	2,800	2,800
Sunburst	20,000	20,000
Others	200	200
Total	23,000	23,000

COLORADO

Moffats (Craig)	3,700	3,600
Fort Collins	4,400	5,200
Florence	450	450
Others	850	650
Total	9,400	9,900

NEW MEXICO

Artesia	3,000	3,000
Hogback	700	650
Rattlesnake	1,250	1,200
Total	4,950	4,850
Total Mountain States	108,700	110,200

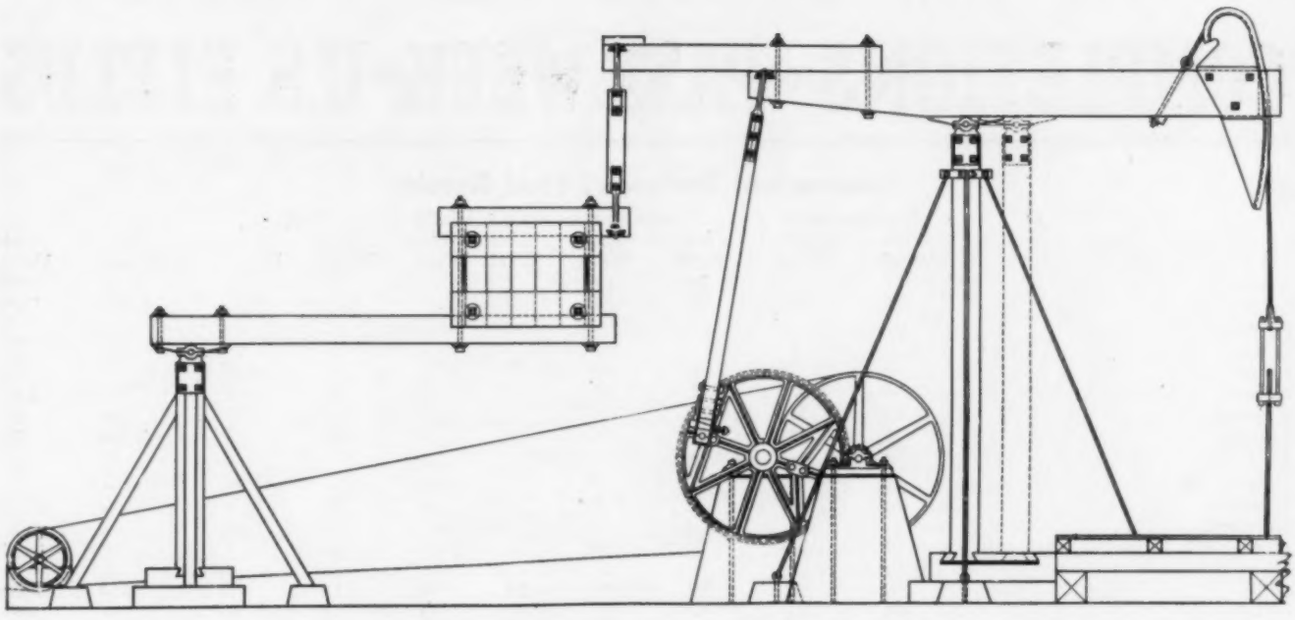
Eastern States

Including Ill., Ind., Ohio, Pa., W. Va., Ky., and N. Y.	104,000	104,500

PRODUCTION SUMMARY

East of Rockies	1,347,550	1,327,300
United States	2,070,950	2,054,400

Can You Match This Farley Pump Performance?



The First Farley Still on the Well

The first Farley Long Stroke Pump was placed on the well in April, 1922. It is still in profitable, trouble-free service.

Before installing the Farley, this well was making 120 barrels of oil, 108 barrels of water, and 12 barrels BS daily.

Today—after four years, this well is producing 120 barrels of oil and 870 barrels of water daily, using the Farley with 4-inch tubing, making 8 strokes per minute on the 10-foot stroke.

DO YOU KNOW OF A RECORD TO EQUAL THIS?

Other Farley pumps are delivering 1800 barrels and more from the well and doing it month after month with practically no maintenance cost or other troubles necessitating expensive shutdowns.

Write Today for new Catalog

Our new Catalog is just off the press. It describes the many valuable features of the Farley Long Stroke pump. The information it contains will be of value to you in solving your pumping problems. We will gladly send you your copy on request—without obligation of course. Write us today.

The Ideal Pump for Heavy Oil

The Farley Pump with its long stroke and slow motion, is ideal for pumping heavy oil, or for wells making an excessive amount of water. Used in connection with 4-inch or 5-inch tubing, it will enable you to pump 1800 to 2000 barrels daily.

This long stroke, with less reversals, decreases sucker rod trouble and increases production. The machine itself will give you continuous trouble free operation.

The Farley Machine Works Company

Arkansas City, Kansas **Peabody, Kansas**

Oklahoma Judge Resigns to Go With Marland

Ponca City, Oklahoma.—The appointment of Judge William H. Zwick of Oklahoma City as counsel for the Marland Refining Company in Oklahoma and Kansas territory has been announced by Samuel W. Hayes, general counsel for the Marland concern.

Judge Zwick will resign has place on the bench of the Thirteenth Judicial District at Oklahoma City and take up his new duties shortly. He will live in Ponca City.

Peerless Supply Store at Phillips, Texas

Tulsa, Okla.—The Peerless Supply Company, with general offices here, have opened a branch store at Phillips, Texas, in the Panhandle field, and are carrying in stock a complete supply of oil field specialties. The company also has stocked a line of Williamsport wire rope which they will distribute in that territory.

W. H. (Bill) McKissick is president of Peerless Supply, Ed Blaylock is vice-president, and E. A. Shaw is secretary-treasurer. E. G. Blaylock will be in charge of the new Phillips store.

COMPLETIONS FOR PAST WEEK IN U.S. FIELDS

Summarized Review of Field Results

State—	Completions This Week	Completions Last Week	Producers This Week	Producers Last Week	Gas Wells This Week	Gas Wells Last Week	Failures This Week	Failures Last Week	Initial Production This Week	Initial Production Last Week
Arkansas	27	18	20	17	2	..	5	1	1,100	1,040
California	18	23	18	23	..	..	..	..	7,493	7,651
Colorado	..	..	..	..	..	..	..	..	....	....
Indiana	..	1	..	..	..	1	..	..	....	....
Illinois	7	7	6	4	1	1	..	2	124	45
Kansas	34	33	18	13	..	1	16	19	2,511	2,330
Kentucky	32	31	24	23	..	..	8	8	166	144
Louisiana	41	17	21	14	8	..	12	3	2,390	735
Michigan	2	..	1	..	..	..	1	..	10	....
Mississippi	..	..	..	..	..	..	..	..	....	....
Montana	..	3	..	2	..	1	..	..	....	35
Nebraska	..	..	..	..	..	..	..	..	....	....
New York	9	10	9	9	..	..	..	1	19	26
New Mexico	..	..	..	..	..	..	..	..	....	....
Ohio	56	50	25	38	20	4	11	8	354	1,006
Oklahoma	98	124	54	72	6	13	38	39	17,684	18,514
Pennsylvania	59	58	55	48	1	5	3	5	161	149
Tennessee	..	..	..	..	..	..	..	..	....	....
Texas	185	183	110	103	6	3	69	77	32,704	39,932
Utah	..	..	..	..	..	..	..	..	....	....
West Virginia	39	50	15	16	18	23	6	11	299	266
Wyoming	..	5	..	5	..	..	..	..	....	2,310
Totals	607	613	376	387	62	52	169	174	65,015	74,183

Texas

GULF COAST

Company, Well and Location	Initial Production Bbls.	Depth
Spindletop—		
Paggi & Company Gordon 1	2400	2975
Gulf Prod. Co. Jas. F. Weed 2-A	1000	2900
Jeanette Mann 1	2000	2850
Porch & Telshaw Trembly 5	*	1620
Saratoga—		
Rio Bravo Oil Co. Cotton 5	40	1560
Goose Creek—		
Gulf Prod. Co. Stateland Oil Co. 8, wo	250	3500
Humble Oil & Ref. Co. Simms-Smith 69	100	2450
Gaillard-Penn. 22	*	3550
Hull—		
Gulf Prod. Co. Phoenix Dev. Co. 19, wo	*	3650
No. 17, wo	400	2800
J. C. Baldwin Fee 18	60	2900
Republic Prod. Co. Dolbear 134	400	2540
Humble Oil & Ref. Co. Guedry 23.	15	3025
The Texas Co. Merchant 4, wo	300	2950
Pierce Junction—		
Navarro Oil Co. Cain 3	2500	4050
Orange—		
Gulf Prod. Co. Lee Hager Fee 4, wo	300	3450
Briggs & Moore 2, wo	800	3550
Brownie-Babbette Oil Co. McLean 12	3500	3600
Kishi Development Co. McGuire 7	180	3600
Boling—		
The Sun Co. Taylor 1, wo	48	3150
Weed-Gayle Oil Co. W. H. Keller 80 Acres 1	570	408

SOUTHWEST TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
Bexar County—		
Hamilton's Hughes 12	25	....
Duval County—		
Cole Petroleum Co. Benavides 26	¶	1780
Killam's 1, Survey 319	¶	1700
Jim Hogg County—		
Associated Oil Co. Lopez 3	700	2149
Maddox & Smith Palacious 1, Survey 291	200	1300
Webb County—		
Crown-Central-Rydal No. 15, Blk 13	900	1707
No. 16, Blk 13	500	1722
Laredo Oil Co. Killam 9	35	1654
Shankle Oil Co. Olson-Ingersol 1, Survey 606	200	1540

SOUTH LOUISIANA

Company, Well and Location	Initial Production Bbls.	Depth
Evangeline—		
Gulf Ref. Co. of La. Jennings-Clement 30, wo	40	1950
F. I. Getty Clement 3, wo	20	1775

ARCHER COUNTY

Company, Well and Location	Initial Production Bbls.	Depth
Allday Oil Co., Powell 1	*	1288
Atlantic Oil Prod. Co., Oldham 4	65	1059
Barnsdall Oil Co., A. J. Lowe 3	*	1593
Dale Oil Corp., Longley 1	*	550
Dale Oil Corp. & Ray-Massie, Coleman 1	*	1750
Gates et al, Thomas 1	175	1166
Thomas 2	80	1165
Hammond et al, Edwards 1	*	1625
Humble O. & R. Co., Hamilton 14	35	1233
Magnolia Pet. Co., I. C. Little 5	55	1281
May Rutty 8-A	4	896
Miller 1-A	*	2325
Marland Oil Co., Thomas 8	75	1167
Thomas 9	50	1169
Thomas 10	*	1182
McCarty Oil Co., Wilson 1	75	1508
Wilson 1 (Lot No. 401)	30	1587
School Land 2	30	1592
Mid-Kansas O. & G. Co., Andrews 1	7	1296
Maer-Staniforth, Wilson 1	*	1653
Slaughter 1	*	1553
Monninger et al, T. B. Wilson 1	300	1641
Murchison-Fain Oil Co., Dietrich 2	110	1176
Logan 1-B	15	1132
Olney Drilling Co., Blewitt 1	*	1503
Shappell Oil Co., Wilson 6-A	*	1740
Shasta Oil Co. et al, Meade 2-A	25	1453
Sun Oil Co., Graham 1-B	*	1342
Abercrombie 1-C	*	1514
Forster 1	*	1520
The Texas Co., Kunkel 6	30	1180
Prideaux 5	*	653
Richardson 13	*	1401
Abercrombie 10	45	1361

THROCKMORTON COUNTY

Company, Well and Location	Initial Production Bbls.	Depth
Humble O. & R. Co., Mrs. M. E. Ledbetter 1	*	752

SOUTH VERNON DISTRICT

Company, Well and Location	Initial Production Bbls.	Depth
Humble O. & R. Co., W. H. Stephens 49	20	2040
Milham Corp.'s W. T. Waggoner 5-L	90	1878
W. T. Waggoner 12-L	100	1922
Phillips Pet. Co., Waggoner 2-HH	80	2570
Waggoner 9-QQ	125	1933
Waggoner 10-QQ	150	1904
Waggoner 1-WW	130	1951
Roxana Pet. Corp.'s Sumner 1	*	1339

Company, Well and Location	Initial Production Bbls.	Depth
Waggoner Ref Co., Waggoner 3-A..	200	1936
Wanderer Oil Co., Ross 1	*	2610
JACK COUNTY		
Baytex Oil Co., Roberts 1.....	*	1002
Murchison-Fain Oil Co.'s Jones 1..	*	2503
Pandem Oil Corp., Wright 1	*	1012
Staley-Wynne, Snedecker 2 (Lot No. 8)	*	785
Snedecker 3 (Lot No. 8)	*	792
Strong et al, Martin 1	*	708
YOUNG COUNTY		
Albright et al, Williams 1.....	*	805
Atlantic Oil Prod. Co., Rachuig 6-B	100	1169
Rachuig 7-B	20	1170
Barkley et al, Stewart 1	*	950
Roy I. Carter et al, Rachuig 1....	*	1250
Chenault-Lea et al, Rachuig 3....	150	1168
Consolidated Oil Co., Casey 1.....	*	1103
Deats & Stimson, Baker 1.....	*	725
Hamilton-Martin et al, Whitehead 4	*	890
Howard et al, Ledbetter 1	*	560
Jeffers & Jeffers, Leberman 1.....	*	599
Long et al, Bryan 3	*	1028
Madden et al, Benson 1	*	940
J. J. Moran et al, Stewart 1.....	60	810
Nash-Windfohr, Watson 1	20	547
Pace Drilling Co., Bernhardt 4	10	1032
Panhandle Ref. Co. et al, Prideaux 1-C	*	653
Riggs et al, Jones 1	*	680
Roberts Oil Corp., E. Rogers 7....	70	868
Sun Oil Co., Dietrich 6.....	60	1176
Tidal Oil Co. et al, Benson 3....	60	934
Wolf et al, Thompson 1	*	805
Woods-Hollerock et al's Wilson 1, ..	*	600
MONTAGUE COUNTY		
Benton-Woods et al, R. Hinds 10..	60	936
F-H-E Oil Co., R. Hinds 4-B.....	50	919
Humble O. & R. Co., R. Hinds 9..	5	954
Pure Oil Co., Oldham 2-A.....	40	1171
The Texas Co., Isaac Gist 11-A....	65	894
Texhoma-Republic Prod. Co., Rowland 4	60	1167
Wemberley et al, Meekins 1	*	1125
MITCHELL COUNTY		
The California Co., Petitfils 1....	125	3080
BIG LAKE		
Big Lake Oil Co., University 57..	†	2655
University 3-B	45	2464
University 4-B	40	2891
University 7-B	340	2886
University 17-A	¶50	2494
Texon Oil & Land Co., University 39	†	2500
HUTCHINSON COUNTY		
Amerada Pet. Corp., J. A. Whittenburg 1-B	65	3036
Derby Oil Co., Johnson 2.....	400	2978
Dixon Creek Oil Co., Smith 13....	720	2862
Smith 17	¶40	2840
Smith 33	775	2820
Smith 36	400	2790
Echo Oil Co., Smith 2	300	2901
Gulf Prod. Co.'s J. A. Whittenburg 3.	260	2943
J. A. Whittenburg 4-A	220	2888
J. K. Hughes Dev. Co., W. L. Kingsland 7-A	105	2844
Gulf-Cline & Panhandle Ref. Co., Dial 10	645	2895
Marland Oil Co., Belle Wisdom 1..	30	3066
McIlroy-Herring Oil Co., Smith 4..1000		2811
Phillips Pet. Co., J. A. Whittenburg 3	50	3014
Sunny Jim Oil Co., H. W. Pitts 2 ¶2-125		2850
J. A. Whittenburg 3	500	2967
GRAY COUNTY		
Shamrock Pet. Co. et al, Worley-Reynolds 1 .....¶3-1500		3028
COMANCHE COUNTY		
Trojan Oil Co., Utterbach 1.....	5	3565
SHACKELFORD COUNTY		
Engle Bros. et al, Matthews 3.....	4	1043
French-Lewis et al, Newell 1.....	*	1770
Roeser-Pendleton Inc., Cook 5-B (Sec. 84)	900	1340
Cook 6-B (Sec. 84) 1000		1330
Cook 4-B (Sec. 85)	*	796
Roeser-Pendleton & Marland Oil Co., Cook 10-A (Sec. 84)	*	1412
Cook 11-A (Sec. 84)	350	1365
Cook 8-A (Sec. 85)	*	1390
Cook 13-A (Sec. 85)	900	1291
Cook 15-A Sec. 85)	200	1296
Wells et al Matthews 1.....	*	1251
BURKBURNETT		
O'Donohoe & Gates Birk George 1.	*	1853
ELECTRA		
Petroleum Investment Co. Fisher 20	7	1799
Red River Oil Co., Bywaters 86..	*	2616
Virginia Oil Co., Burnett 1	5	1565
K-M-A AND IOWA PARK		
O. C. Lawrence et al, Chilson 3....	*	780
John O'Neil's Harrison 1	4	592
BROWN COUNTY		
Barkley-Conway et al, Allen 4.....	10	1160
J. S. Cosden et al, Williams 9-A..	60	1199
Gilman-McMurray et al, Teston 8.	30	1290
Humble O. & R. Co., J. H. Allen 3	10	1160
W. W. Allen 4	*	1170
E. P. & W. H. Kilgore 5-B.....	*	1201
H-W Drilling Co., Prather 7.....	35	1340
Louisiana O. & R. Co., Henslee 2	60	1300
McLester Oil Co., Clark 8.....	100	1222
J. Wooldridge 4	250	1271
J. Wooldridge 5	230	1270
Oil Operators Trust Co., Wright 1	*	1385
The Texas Co., Edington 4	*	1281
Valley Oil Co., Teston 2.....	5	1252
COLEMAN COUNTY		
Bateman-Campbell et al, Morris 1.	*	2600
CALLAHAN COUNTY		
Amerada Pet. Corp., Long 1.....	145	1403
Cranfill-Reynolds et al, Henderson 1	120	1401
French-Lewis et al, Yost 1.....	*	1815
Prairie O. & G. Co., R. Cunningham 3	75	1405
T. B. Slick et al, Bond 2.....	†	900
EASTLAND COUNTY		
Delaney et al, Terry 1	*	3028
Eastland Oil Co., Wright 2	150	1586
Lewis et al, Wright 2	*	1617
Ingleright et al, Bell 1	*	1604
STEPHENS COUNTY		
Humble O. & R. Co., Houston 1..	*	2225
Roeser-Pendelton, Inc., Rush 1.....	*	3325
Texas Pacific Coal & Oil Co., Gardenshire 5	*	3320
The Texas Co., Curry 2.....	*	3398

Louisiana

Company, Well and Location	Initial Production Bbls.	Depth
Bellevue Field—		
Louisiana Oil Ref. Corp.'s Bodcau B-12, 11-19-11	10	415
The Texas Co.'s Moon 1, 13-19-11..	*	493
Total, 2 wells	10	
Caddo Parish—		
Gilliam Synd's Cummings 1, 20-21-14	3	901
Gulf Ref. Co.'s Ferry Lake 243, 15-20-16	150	2280
Tyson 12, 14-21-15	¶42	3819
McGoldrick et al's Murray 9, 14-21-15	7	1648
Murray & Jones' Youree-Randolph 1, 13-20-15	*	2291
Standish Oil Co.'s Allen 7, 23-22-15	15	1070
The Texas Co.'s Caddo Levee Board 62, 33-21-16	10	2195
Chew Fee 4, 33-21-16	60	1863
Woodley Pet. Co.'s Knight 3, 35-16-12	20	2426
Total, 9 wells .....¶62-245		
Monroe Gas Field, Ouachita Parish—		
Hodge-Hunt Synd.'s Roberts 1, 11-18-4e	¶8	2204
J. M. Huber's Banks 3, 36-19-4e, ..¶1½		2243
G. E. Jordan's Fudicaker 1, 13-18-4e ¶2½		2239
R. J. O'Brien's Roy & Green 1, 2-18-4e . . ..¶4½		2202
Monroe Gas Field, Union Parish—		
Ruston Drlg. Co.'s Parks 2, 30-20-4e	¶½	2190
Southern Carbon Co.'s Grayling B-2, 32-21-4e	¶17	2098
Total, 6 wells	¶34	
Urania Field, La Salle Parish—		
O. W. Clark Trust's Russell D-2, 25-10-1e	25	1559
Tullos 4, 23-10-1e	75	1505
Chal Daniels et al's Tullos 2, 25-10-1e	80	1545
A. E. Hudson's Urania 4, 7-10-2e ..	75	1530
H. L. Hunt's Urania Lumber Co. 1, 2-9-1e. 1500		1493
Louisiana Oil Ref. Corp.'s Tremont A-9, 33-9-1e.	75	1518
Modisett-Gerrett Drlg. Co.'s Urania 2, 7-10-2e	*	1600
Natural Gas & Fuel Corp.'s Urania H-2, 18-10-2e	50	1543
Urania K-3, 18-10-2e	20	1523
Nelson et al's Doughty 1, 36-10-1e	*	1680
Nelson et al's Doughty 1, 36-10-1e ..	*	1680
Urania Field, Winn Parish—		
O. W. Clark Trust's Harper 4, 26-10-1e	100	1491
Keen & Woolf's Tisdale 1, 26-10-1e .	75	1501
Total, 12 wells 2075		

Arkansas

Company, Well and Location	Initial Production Bbls.	Depth
Irma Field, Nevada County—		
Webb et al's Haynie 1, 1-14-21	¶20	1136
Smackover Field, Union County—		
G. J. Childs' Fee 3, 8-16-16	25	2602
Humble O. & R. Co.'s Flenniken B-6, 9-16-15	175	2450
Imperial O. & G. Co.'s McClanahan 4, 6-16-15	5	2277
E. M. Jones' Foster 1, 19-16-16 ..	*	3030
Magna Prod. Co.'s Tatum 5, 7-16-15	50	2023
Murdock et al's Hayes 8, 4-16-15..	200	2357
Peer Oil Corp.'s Palmer 6, 9-16-15	¶35	2715
Ramage et al's Lawton C-7, 10-16-15	135	2417
Williams et al's Goodwin 3, 16-16-15	*	2500
Total, 10 wells	¶35	
Lisbon Field, Union County—		
Arkansas Drlg. Co.'s Rogers 1, 20-17-16	*	2202
Atlantic Oil Prod. Co.'s Ford 1, 3-17-16	30	2115
Goodwin 2, 16-17-16	65	2140
Humble O. & R. Co.'s Goodwin 4, 16-17-16	50	2165
Keisker et al's Harrell 2, 15-17-16	15	2125
Lion O. & R. Co.'s Dumas A-2, 10-17-16	5	2110
Mitchell A-12, 17-17-16	40	2136
Magnolia Pet. Co.'s Harrell 6, 4-17-16	60	2129
Natural Gas & Fuel Corp.'s Harrell A-4, 17-16-15	*	2662
Willett 5, 4-17-16	45	2129
Willett 6, 4-17-16	60	2106
Willett 7, 4-17-16	35	2105
Ohio Oil Co.'s Goodwin 6, 21-17-16	25	2173
Rovenger Oil Corp.'s Goodwin A-6, 16-17-16	30	2144
Roxana Pet. Corp.'s Willett 1, 3-17-16	30	2126
Southern Crude Oil Purch. Co.'s Slaughter 4, 3-17-16	20	2110
Total, 16 wells	510	
EAST TEXAS		
Panola Field—		
Harper & Hudson's Johnson 1, B. C. Jordon H/R Survey, Panola County . . . .¶1-5		1970

California

Company, Well and Location	Initial Production Bbls.	Depth
Long Beach—		
E. L. Blanton's Los Cerritos 2....	900	4840
R. R. Bush's Bell 2	150	4830
Casa Blanca Oil Co.'s No. 3.....	250	3810
Combs Trust Co.'s 3-4	910	4848
Featherston-Preston's Los Cerritos 11	250	4785
Hub Oil Co.'s Burns 1	490	4803
Jim O'Donnell's Los Cerritos 49....	950	4845
San Martinez Oil Co.'s Booth 4-A.	550	5210
Frank Travers' Los Cerritos 1.....	250	4820
H. L. Whiston's Los Cerritos 3....	600	4785
Baldwin Hills—		
Standard Oil Co.'s L. A. Investment 1-49	500	2284
Torrance—		
Chanslor-Canfield Midway Oil Co.'s Del Amo 51	325	3765
Standard Oil Co.'s Marbe-Fee 25..	47	3722
Huntington Beach—		
Associated Oil Co.'s Dennison 1....	35	4774

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When you have an underreaming job in hard formation—with an expensive cement job at stake—you want to know that the underreamer you use will actually cut the hole to desired size for setting casing.

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designed for Hard Formations

Note the Cutter Assembly

GRANT underreamers are also made with blade cutters for soft formations.

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Los Angeles : California

Company, Well and Location	Initial Production Bbls.	Depth
General Pet. Corp.'s Dabney 4....	30	3380
Standard Oil Co.'s Huntington Beach 46	354	4263
Huntington Beach 47	702	4286
Santa Barbara County—		
R. & G. Oil Co.'s Cat Canyon 4...	200	2900

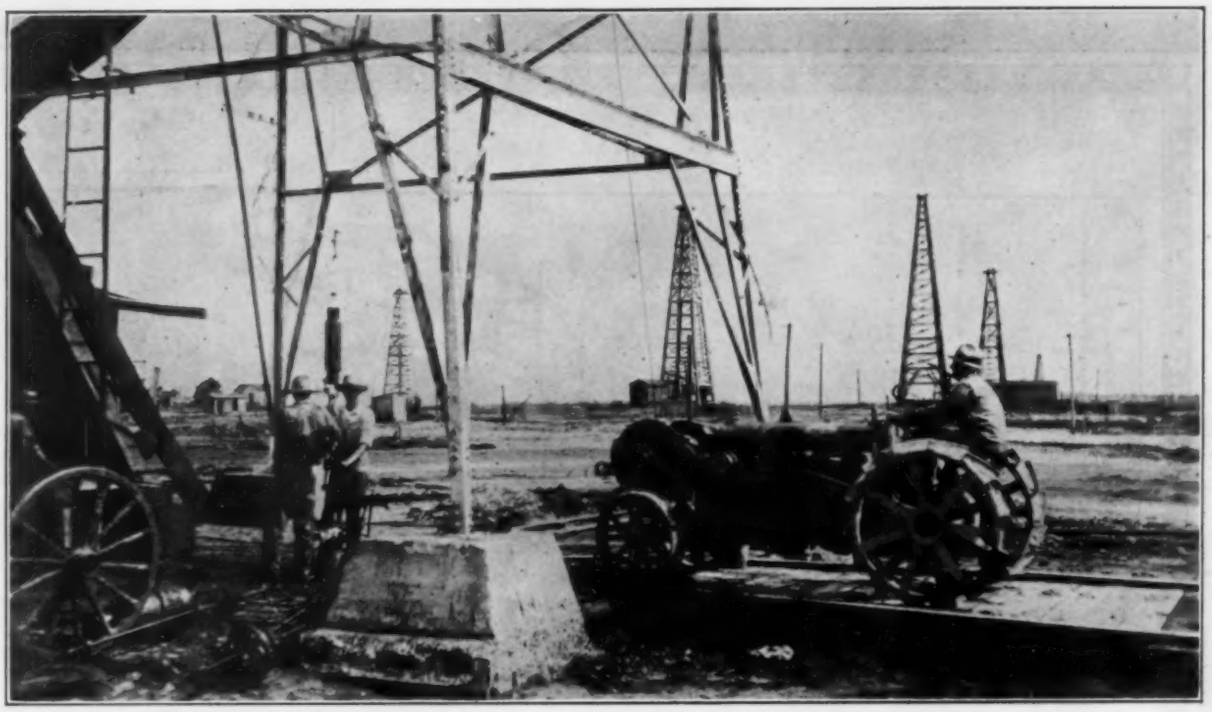
Note.—Three Wildcats; 2 prod., 1 abn.

Kansas

Company, Well and Location	Initial Production Bbls.	Depth
Butler County—		
Mid-Kansas Oil & Gas Co., Harris 2, SEc NE 22-27-7	150	2741
Cowpuncher Oil Co., Drum Bitler 3, C NE SE 30-26-8	*	2830
Cowley County—		
Trees Oil Co., Lewis 3, NEc NW NE 28-31-4	100	2427
Little Martha Oil Co., Sandstrom 2, C S L NH SE NW 24-33-6	28	2836
Duffield et al, Graham 1, C SE NW NE 9-33-3	*	2547
Springstead and Overlease, Sterling 1, C NE SW 5-35-5	*	3733
Greenwood County—		
Empire Gas Fuel Co., Atyeo, owd, NEc NE NW 6-22-10	75	2270
Kansas Oil Co., Atyeo 4, SWc NE NE 6-22-10	120	2255
Mid-Kansas Oil & Gas Co., Pixlee 4, NEc SW NW 8-22-10	40	2385
The Prairie Oil & Gas Co., Fechter 4, NWc 12-22-10	308	2088
Fechter 5, SWc NW NW 12-22-10	240	2131
Empire Gas & Fuel Co., Killison 8, NEc SW NW 14-22-11	50	1910
Fromme 10, NWc SE NW 14-22-11	100	1905
York State Oil Co., DeMalorie 8, SEc NE SW 32-22-11	150	1977
Phillips Pet. Co., Mosby 5, SEc 26-23-8	30	2538
Skelly Oil Co., Green 3, SWc NE NE 15-23-9	200	2357
Manhattan Oil Corp., and Phillips Pet. Co., Edwards 1, SWc NE NW 16-23-11	5	1989
McGinnis et al, Wiggins 5, SEc NW SW 30-24-11	200	1840
Tidal Oil Co., Stevenson 11, NEc NW SE SW 2-26-8	40	2424
Paul et al, Morris 1, SWc SE SW 17-23-9	*	2720
Roth et al, Mission Oil Co., Thrall 2, C E L WH 27-23-10	*	2371
Connell et al, Inthrim 1, SWc NE 10-23-12	*	1828
Enterprise Development Co., Thrall 2, NWc SW SW 7-24-12	*	1786
Peerless Oil & Refining Co., Kester 1, NWc NE 33-24-12	*	....
Smith, Carlson and Marshall, Duke 2, NEc SW SE 22-26-9	*	....
Mohawk Oil & Gas Co., Essick 1, NWc SW 18-27-11	*	1934
Lyon County—		
Sheedy et al, Atyeo 10, SEc NE SW 31-21-10	200	2310
Holmquist et al, Stutton 1, SWc NE 1-16-12	*	....
Parking et al, Welch 1, NWc SE 18-21-12	*	2126
Summer County—		
Roxana Pet. Corp., Churchill 1, NEc SW 25-31-2	500	1865
Sinclair Oil & Gas Co., Holt 1, NEc SE SE 24-32-2	50	3581
Marland Oil Co., Schwartz 1, NWc NE NE 27-34-2	*	3533
Chase County—		
Phillips Oil & Gas Co., Johnson 1, SWc NW NW 15-20-9	*	2575
White Eagle Oil & Ref. Co., Evans 1, NEc 1-22-9	*	....

Oklahoma

Company, Well and Location	Initial Production Bbls.	Depth
Caddo County—		
English Drilling Co. Abernathy 4, NEc SE SE 31-6-9	26	2252
Gorton Trust Co. Wagner 5, SWc SE NE SW 12-5-9	50	2393
English Drilling Co. Gafney 1 SEc NW SE 31-6-9	*	2380
Carter County—		
Humble Oil & Ref. Co. Jordon 4, NEc SE NW 19-1-3	¶19½	2907
Magnolia Pet. Co. Fish 3, SEc NE SW 34-1-3	392	3037
Wirt Franklin and Prairie Oil & Gas Co. Pruitt 3 NEc SE NW 3-2-3	1500	2004
Carter Oil Co. Kimbrall 3, SWc NW SW 22-2-3	90	2157
Amerada Pet. Corp. Baptiste 24, NEc SE NW SE 20-5-1	45	1414
Farve 28, NEc NW SE 20-5-1	25	1405
Humble Oil & Ref. Co. Charles Johnson 1, NEc SW NE 4-2-3	*	3500
Comanche County—		
Westheimer and Daube Watson 1, SEc NE NE 24-2-10	140	1847
Humble Oil & Ref. Co. Dunham 1, SEc NE 23-2-10	*	....
Creek County—		
Brulengane and Sharp Peters 5, NEc NW SW NW 13-19-8	100	2887
Roxana Pet. Corp. Sewell 1-A, owd, NWc SW NE 18-19-9	721	2989
Kirshner et al, Holden 2-A, C S L NE SE 23-17-10	5	2517
Emery and Sons Jacobs 7, SEc NW NE 21-16-9	50	2943
The Prairie Oil & Gas Co. Henderson 4, NEc 11-14-8	60	2452
Independent Oil & Gas Co. Bear 1, SWc NW 29-14-10	50	2840
M. P. Evans et al, Taylor 1, NEc NW 22-18-9	*	3172
R. O. Bailey et al, Harris 1, SEc NE SE 12-17-10	*	2915
M. Mead et al Wilson 1-A, SWc NW SW 16-17-11	*	....
Joemack Oil Co. Long 1, C E L WH EH NW 5-14-9	*	3713
Garfield County—		
Mid-Continent Pet. Corp. and Marland Oil Co. School land 66, NEc SE 13-22-4	747	3058
Sinclair Oil & Gas Co. Walker 51, (N) SWc SE NE 13-22-4	65	2725
Hartley 30, NEc SW NW 18-22-3	950	4204
Hartley 44, SW NW SE NW 18-22-3	256	2554
Kisner 16, (E) NWc SE NE 19-22-3	50	1391
Walker 15, (N) NE NW NW NE 13-22-4, owd	*	2706
Roxana Pet. Corp. Schroeder 10-A, SEc SW 18-22-3	*	3614
Grady County—		
Stogner et al, Edmundson 3, C S L NW NW SW 23-5-8	¶30	2345
Carter Oil Co. Cox 1, owd, C NW SE 14-4-6	¶1	2600
Thelma Horton 1, NEc NW SW 8-3-5	¶7½	181
Gant et al, Polson 1, SWc NW SE 27-3-5	10	1383
Magnolia Pet. Co. Mitchell 1, NEc NW 34-3-5	330	1550
Becker et al, Brown 1, C NW NE 29-6-7	*	3042
Hughes County—		
Amerada Pet. Corp. Frederick 8, SW NW SE NW 5-7-8	1635	4162
Frederick 9, SWc SE NW 5-7-8	1640	4200
Dixie Oil Co. M. Garner 3, SWc NW NE 5-7-8	1430	4204
Jefferson County—		
Gypsy Oil Co. Seay 28, NEc SW NW 33-6-5	77	1378
Seay 29, C SE NW 33-6-5	80	1349
Kay County—		
Comar Oil Co. Priboth 8, owd, SEc NE NW 21-29-1	40	2365
Marland Oil Co., Dickerson 1, NEc SE 17-29-1	245	3380
Comar Oil Co., Jorne 1-W, NEc NW NE NW 8-28-1	183	2808
Blackwell Oil & Gas Co., Jamison, NEc SE 5-27-1	360	3448
Wentz Oil Corp., Mahoney 9, NEc SW NE SE 28-25-11	427	4275
Dance et al, Peckham 1, SEc NW 27-27-1	*	4200
O'Kansas Oil Co., Chamber 1, NWc 32-27-1	*	3905
Noble County—		
Magnolia Pet. Co., Weeder 1, NWc NE 22-21-2	8	4502
Okfuskee County—		
E. L. Robinson, Severs 1, NEc NW SE 35-11-9	150	3198
The Prairie Oil & Gas Co., Groves 1, C N L NE 30-11-10	¶3	2715
Okmulgee County—		
J. A. Swindler and Sons, Lewis, NEc SW NE 25-13-11	200	2477



HE SAID: *"I wouldn't try to run a lease again without the W-K-M Winch"*

About eight months ago Morris Standifer, Field Manager for the Humble Oil Company at Goose Creek, Texas, purchased his first W-K-M Winch. A bit later on, he bought another. In the few words above he sums up what he thinks of them. Read also his comment below:

When asked if he would object to telling other oil field men of his experiences with his W-K-M Winches, Mr. Standifer said:

"I am always willing to tell the boys about equipment that has given me service and satisfaction, and our W-K-M Winches have certainly done this. We use them for about every kind of work done on the Company's leases here. We pull rods and tubing, unload barges, pull rigs into place, and do a dozen other kinds of jobs with them.

"One of our toughest jobs is pulling a 2,000 foot well equipped with a string of 3-inch, ten-pound tubing. Recently, we pulled both rods and tubing at the same time with our W-K-M Winch, and the tubing was loaded with oil. We used five lines for this job—although we could probably have done it with four. I don't believe in riding a machine too hard, though.

"We are pulling 3,000 foot strings of 2-inch tubing right along, and have no trouble whatever. We find the W-K-M Winch with the Fordson Tractor very fast, economical and mighty convenient. As a matter of fact, I wouldn't try to run a lease again without the W-K-M Winch."

Mr. W. F. Bradley and Mr. L. M. Butler are assistant production superintendents under Mr. Standifer. Each has charge of one of the Company's Goose Creek Leases, and on each lease a W-K-M Winch is used. Mr. F. E. Taber, gang pusher under Mr. Bradley, shown above operating one of the Company's W-K-M Winch outfits, says of it:

"I have found the W-K-M Winch and Fordson Tractor to be just about twice as fast as a standard rig in pulling rods and tubing. Naturally we are able to get our wells back on the pump quicker than with old methods, and the cost of operation is a great deal less. It is mighty fast on other classes of work, too. Not long ago we broke out 80 thribbles of 3-inch drill stem in 3½ hours, using two crews. That's making time! Of course the pipe was racked in the derrick to start with."

If you have not yet investigated the W-K-M Winch for use on your lease, by all means send in the coupon below. It will bring you our 24-page Winch Book and other valuable information without obligation. Do it right now!

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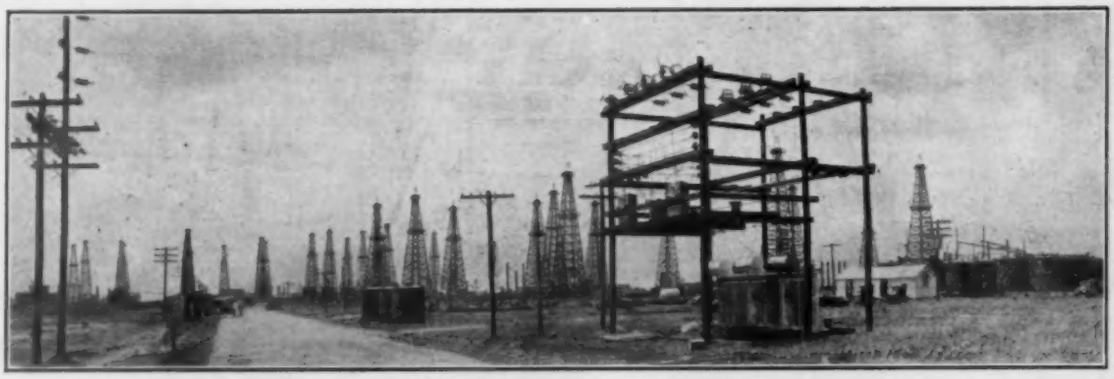

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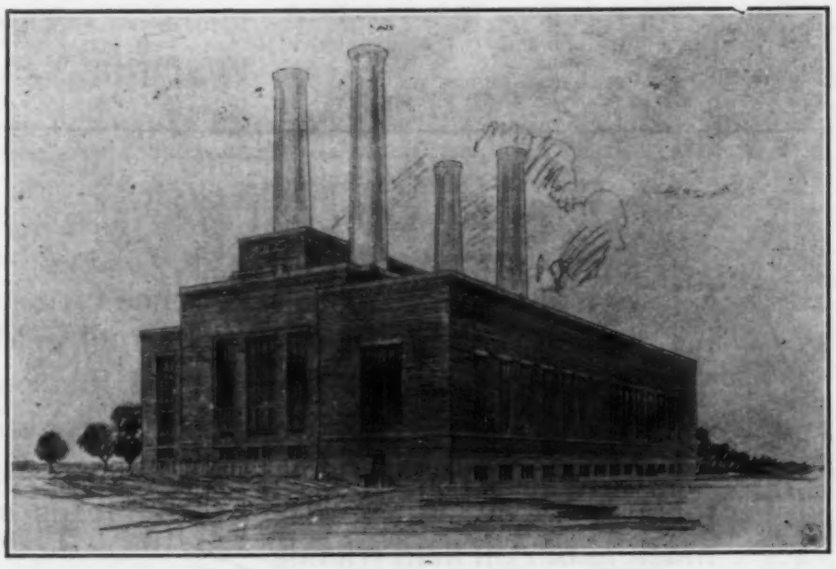

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Eastern Texas Electric Company - Louisiana Electric Company, Inc.
Gulf States Utilities Company - Western Public Service Company
Under the Executive Management of Stone and Webster INC.

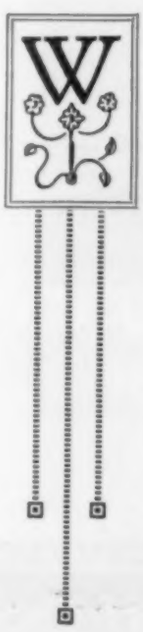
Company, Well and Location	Initial Production Bbls.	Depth
C. O. Buckles, Jacobe 4, owd, NEc 6-11-12	10	1687
The Texas Co., M. Bruner 4, SWc SE 16-15-14	400	2347
Wigton Long and Mid-Continent Pet. Corp., Bitler 1, SEc SW NE 23-15-12	*	2634
R. E. Garrett et al, Madigan 1, NEc NW NW 30-14-11	*	3177
W. L. Barclay, Corbray 1, SWc NW 33-11-12	*	2803
A. E. Kirkland and Son, Jimmie 3, SWc SE 8-15-13	*	2596
Vensell and Elliott, Harrison 9, SWc NE SW 18-15-14	*	1696
Osage County—		
Keener Oil & Gas Co., 16, SWc NE 15-29-10	40	1016
17, NE SE NE 15-29-10	20	1026
Phillips Pet. Co., 4, SEc SW 1-27-5	730	3017
8, NEc SE NE 12-27-5	325	3010
14, NE NW SE 20-26-6	100	2970
8, NE SE SW 21-26-6	600	2962
Lewis Oil Co. 6, NW SW SE 21-26-6	450	2975
Barnsdall Oil Corp. 10, SWc SE NW SW 17-23-12	1	1619
Skelly-Moore 2, SW SE SW 35-22-6	50	2367
Kewanee Oil Co. 14, NWc SE NW NE 5-22-11	25	1906
Devonian Oil Co. and Tidal Oil Co., 3, C E L WH EH SW 27-21-10	15	1933
Winona Oil Co. 7, C E L NE 29-20-12	125	2034
Indian Territory Illuminating O. Co., 1, SEc 25-29-10	*	1928
Phillips Pet. Co., 5, NWc SW NE 2-27-5	*	2949
New England Oil & Pipe Line Co., 1, NWc 30-25-9	*	2642
Western American 1, SWc 22-24-10	*	1213
Skelly Moore, 5, SWc SE 3-21-9	*	2304
Devonian Oil Co., 1, SEc SW SE NE 24-21-9	*	2730
2, NEc SE SE 15-21-10	*	1754
Winona Oil Co. 1, SE NW SE NE 20-21-11	*	2547

Company, Well and Location	Initial Production Bbls.	Depth
Pawnee County—		
Superior Oil Co., Gillespie 1, C SW NE 9-20-7	¶5	2612
Seminole County—		
Carter Oil Co., Carter 1, SWc NW NE 24-9-6	105	3950
Mid-Continent Pet. Corp., Pahardy 1, NEc SE SW 24-9-6	1481	3956
T. B. Slick, Alexander 1, SEc SW SE 7-9-8	105	3267
Magnolia Pet. Co., Skinner 7, SWc NE SW NW 5-7-8	960	4200
Stephens County—		
J. R. McQueen, Brittian 5, owd, NEc SW SW 20-1-8	¶4	2100
Danciger Oil Co. Conner 1 NWc SW NE 10-2-4	*	2600
Winkler and McQueen, Springer 5, SE NE NW 28-1-8	*	2334
Commercial Pet. Co., Fobb 11, NEc SW SE SW 12-3-8	*	2210
Hawks and Ware, Yates 1, C E L WH NW NW 34-2-7	*	2521
Harry Hanbury Porter, SWc NW 12-3-7	*	2504
Tulsa County—		
Elliott et al, Thomas 1, owd, C S L NE SE 8-18-13	40	1010
D. R. Owens, Scott 1-A, NE SE NE NW 25-18-14	5	1337
Peterson Brothers, Boone 1, NWc SE NW 24-18-13	*	1609
Petroleum Corp. et al, Buck 19, SWc NE 4-16-13	*	2192
Wagoner County—		
B. B. Wheeler et al, Chissoe 1, C S L SW NE SE 7-16-18	*	1201
Garvin County—		
Cosden et al, Hensley 1, NEc SW 32-3-3	*	2200
Muskogee County—		
E. L. Kistler, Vanderslice 4, NWc SE SW 32-15-15	*	2565
Ozark Drilling Co., Smith 1, SWc 31-15-19	*	1317
Cumberland Oil Co. and Whaley, Compton 3, NE SW SW 5-14-9	*	751

Eastern States

PENNSYLVANIA

Company, Well and Location	Initial Production Bbls.	Depth
Bradford Field—		
McDowell & Andrus Bingham 321, tract 71	3	....
Hamlin & Bovaird Rew 14	3	....
Mohan & Grant Bingham 425, tract 10	5	....
Hunter & Co. Hunter 32	3	....
Forest Oil Co. Forest 1	5	....
Towne & Melvin Franchot 8	7	....
Johnston & Son Johnston 21	5	....
F. Gallup & Co. Rew 1	4	....
G. L. Rhodes & Co. Emerson 1	3	....
A. Schorman Sanderson 2	4	....
J. H. Hifler Hifler 1	3	....
T. H. Kennedy Bingham 490, tract 139	3	....
B. P. Brown & Co. Bingham 1	3	....
T. B. Wilson Wilson 9	3	....
Dodge & Hilliard Hilliard 19	3	....
A. Stover Stover 1	3	....
Hazlewood Oil Co. Bingham 370, tract 71	3	....
Bingham 41	5	....
T. H. Kervin, Jr., Kapp 1	3	....
Douglas & Co. Burns 1	3	....
M. C. Reidy & Co. Reidy 14	3	....
Hungiville & Co. Brown 1	3	....
Wilson & Co. Windsor 12	2	....
W. M. Jackson & Co. Hallenbeck & Co. 1	3	....
J. B. Randall Keating 1	3	....
George & Kervin D. C. & B. Co. 1	4	....
Mitchell & Juetter Bros. Taggert 1	4	....
Kane & Co. Bingham 430, tract 70	3	....
Maxwell Bros. Franchot 16	3	....
Bliss Oil Co. Burns & Co. 31	2	....
C. L. Wann & Co. Bingham 388, tract 50	2	....
Douglass & Co. Borden 1	2	....
Burns Bros. Burns 1	3	....
South Penn Oil Co. Whipple 1	3	....
Johnson & Wright Wright 1	3	....
M. E. Jones Taylor 1	3	....



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Company, Well and Location	Initial Production Bbls.	Depth
C. O. Buckles, Jacobe 4, owd, NEc 6-11-12	10	1687
The Texas Co., M. Bruner 4, SWc SE 16-15-14	400	2347
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R. E. Garrett et al, Madigan 1, NEc NW NW 30-14-11	*	3177
W. L. Barclay, Corbray 1, SWc NW 33-11-12	*	2803
A. E. Kirkland and Son, Jimmie 3, SWc SE 8-15-13	*	2596
Vensell and Elliott, Harrison 9, SWc NE SW 18-15-14	*	1696
Osage County—		
Keener Oil & Gas Co., 16, SWc NE 15-29-10	40	1016
17, NE SE NE 15-29-10	20	1026
Phillips Pet. Co., 4, SEc SW 1-27-5	730	3017
8, NEc SE NE 12-27-5	325	3010
14, NE NW SE 20-26-6	100	2970
8, NE SE SW 21-26-6	600	2962
Lewis Oil Co. 6, NW SW SE 21-26-6	450	2975
Barnsdall Oil Corp. 10, SWc SE NW SW 17-23-12	1	1619
Skelly-Moore 2, SW SE SW 35-22-6	50	2367
Kewanee Oil Co. 14, NWc SE NW NE 5-22-11	25	1906
Devonian Oil Co. and Tidal Oil Co., 3, C E L WH EH SW 27-21-10	15	1933
Winona Oil Co. 7, C E L NE 29-20-12	125	2034
Indian Territory Illuminating O. Co., 1, SEc 25-29-10	*	1928
Phillips Pet. Co., 5, NWc SW NE 2-27-5	*	2949
New England Oil & Pipe Line Co., 1, NWc 30-25-9	*	2642
Western American 1, SWc 22-24-10	*	1213
Skelly Moore, 5, SWc SE 3-21-9	*	2304
Devonian Oil Co., 1, SEc SW SE NE 24-21-9	*	2730
2, NEc SE SE 15-21-10	*	1754
Winona Oil Co. 1, SE NW SE NE 20-21-11	*	2547
Pawnee County—		
Superior Oil Co., Gillespie 1, C SW NE 9-20-7	¶5	2612
Seminole County—		
Carter Oil Co., Carter 1, SWc NW NE 24-9-6	105	3950
Mid-Continent Pet. Corp., Pahardy 1, NEc SE SW 24-9-6	1481	3956
T. B. Slick, Alexander 1, SEc SW SE 7-9-8	105	3267
Magnolia Pet. Co., Skinner 7, SWc NE SW NW 5-7-8	960	4200
Stephens County—		
J. R. McQueen, Brittian 5, owd, NEc SW SW 20-1-8	¶4	2100
Danciger Oil Co. Conner 1 NWc SW NE 10-2-4	*	2600
Winkler and McQueen, Springer 5, SE NE NW 28-1-8	*	2334
Commercial Pet. Co., Fobb 11, NEc SW SE SW 12-3-8	*	2210
Hawks and Ware, Yates 1, C E L WH NW NW 34-2-7	*	2521
Harry Hanbury Porter, SWc NW 12-3-7	*	2504
Tulsa County—		
Elliott et al, Thomas 1, owd, C S L NE SE 8-18-13	40	1010
D. R. Owens, Scott 1-A, NE SE NE NW 25-18-14	5	1337
Peterson Brothers, Boone 1, NWc SE NW 24-18-13	*	1609
Petroleum Corp. et al, Buck 19, SWc NE 4-16-13	*	2192
Wagoner County—		
B. B. Wheeler et al, Chissoe 1, C S L SW NE SE 7-16-18	*	1201
Garvin County—		
Cosden et al, Hensley 1, NEc SW 32-3-3	*	2200
Muskogee County—		
E. L. Kistler, Vanderslice 4, NWc SE SW 32-15-15	*	2565
Ozark Drilling Co., Smith 1, SWc 31-15-19	*	1317
Cumberland Oil Co. and Whaley, Compton 3, NE SW SW 5-14-9	*	751

Eastern States

PENNSYLVANIA

Company, Well and Location	Initial Production Bbls.	Depth
Bradford Field—		
McDowell & Andrus Bingham 321, tract 71	3	....
Hamlin & Bovaird Rew 14	3	....
Mohan & Grant Bingham 425, tract 10	5	....
Hunter & Co. Hunter 32	3	....
Forest Oil Co. Forest 1	5	....
Towne & Melvin Franchot 8	7	....
Johnston & Son Johnston 21	5	....
F. Gallup & Co. Rew 1	4	....
G. L. Rhodes & Co. Emerson 1	3	....
A. Schorman Sanderson 2	4	....
J. H. Hifler Hifler 1	3	....
T. H. Kennedy Bingham 490, tract 139	3	....
B. P. Brown & Co. Bingham 1	3	....
T. B. Wilson Wilson 9	3	....
Dodge & Hilliard Hilliard 19	3	....
A. Stover Stover 1	3	....
Hazlewood Oil Co. Bingham 370, tract 71	3	....
Bingham 41	5	....
T. H. Kervin, Jr., Kapp 1	3	....
Douglas & Co. Burns 1	3	....
M. C. Reidy & Co. Reidy 14	3	....
Hungiville & Co. Brown 1	3	....
Wilson & Co. Windsor 12	2	....
W. M. Jackson & Co. Hallenbeck & Co. 1	3	....
J. B. Randall Keating 1	3	....
George & Kervin D. C. & B. Co. 1.	4	....
Mitchell & Juetter Bros. Taggert 1	4	....
Kane & Co. Bingham 430, tract 70	3	....
Maxwell Bros. Franchot 16	3	....
Bliss Oil Co. Burns & Co. 31	2	....
C. L. Wann & Co. Bingham 388, tract 50	2	....
Douglass & Co. Borden 1	2	....
Burns Bros. Burns 1	3	....
South Penn Oil Co. Whipple 1	3	....
Johnson & Wright Wright 1	3	....
M. E. Jones Taylor 1	3	....

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In Oil Field Equipment ~ the Most Human Organization in America

Company, Well and Location	Initial Production Bbls.	Depth
Phoenix Oil Co. Clark & Co. 161 ..	2	....
Kaber & Co. Kaber 35	2	....
Hope Oil Co. Sill 9	3	....
Sill 10	4	....
Devere & Co. Monroe 1.....	2	....
Venango County—		
Ginter & Co. Shoup 2	*	....
C. B. Kern Kern 15	2	....
S. P. McCalmont Moses 14	2	....
E. Siderman Hasson 51	*	....
Hasson 52	2	....
Alum Rock Gas Co. Kapp 2.....	¶1	....
Monjar & Hawkins Hoffman 30 . ..	2	....
D. F. Manion Gormley 12	2	....
McDowell & Co. Kimes 3	2	....
A. P. Warner & Co. Shreve 11 . ..	2	....
Friggle & Co. Lewis 59	2	....
Center-Middle Field—		
McCool Bros. Smith 1	2	....
Tompsett & Co. Tompsett 75.....	2	....
Pequignot & Co. O'Hara 13	2	....
Rembold & Co. Osten 5	2	....
Butler County—		
Parker & Black Corso 1	2	....
Hildebrand & Co. Fennell 1	2	....
Washington County—		
E. R. Tague & Co. Tyler Tube & Pipe Co. 1	*	....

NEW YORK

Allegany County—		
S. Austin & Co. Dean 1	2	....
A. D. Reeland & Co. South Penn 1	2	....
L. A. Wilson Wilson 1.....	2	....
James McMillan Coast & Co. 1	2	....
F. W. Forness, Jr. Forness 1	3	....
Jennings & Sawyer Beatty & Co. 1	2	....
Carthwright & Co. Herrick 1	2	....
Dusenbury & Co. Haseltine 1	2	....
Phillips & Co. McDavitt 1	2	....

WEST VIRGINIA

Roane County—		
Taylor & Cart M. E. Church lot 1	¶2	....
Heck Oil Co. A. B. Sheets 1	8	....
H. C. Cottle 1	15	....
United Fuel Gas Co. Noe-Vandall 1	¶¼	....
South Penn Oil Co. E. J. Harris 4	¶2	....
Godfrey L. Cabot J. B. Webb 1 ...	¶2	....
H. R. Suter & Co. John Young 1.	¶2	....
Clay County—		
South Penn Oil Co. Joseph Belcher 7	10	....
O. D. Stockley 23.....	140	....
R. P. Parker 1	30	....
Reed & Stevenson Bethel M. E. Church lot 1	2	....
Gilmer County—		
Pittsburg & West Virginia Gas Co. J. M. Matheney 1	*	....
I. S. Stalnaker 1	*	....
McCall & Co. Anthony H. Moore 2	¶2½	....
Mill Fork Oil & Gas Co. W. E. Snodgrass 1 . .....|	¶2½	....
Pleasants County—		
Stout & Co. William Elliott 1	*	....
O. C. Cunningham & Co. A. S. Hart 1	*	....
Everson & Co. E. N. Cook 35	25	....
Calhoun County—		
W. H. Bickel Martha A. Stump hrs. 7	¶2	....
Martin Crowley L. A. Storms 1 . ..	¶2¼	....
Hope Construction & Ref. Co. Okey Parsons 1	5	....
Ritchie County—		
L. N. Rinehart & Co. Curtis Mitchell 3	50	....
Carnegie Natural Gas Co. A. I. Kelly 5 . . ..|	¶1¼	....
Wetzel County—		
Manufacturers Light & Heat Co. D. C. Hostattler 2	3	....
J. B. Orndoff Emma Kirkhart 4	¶3	....
Harrison County—		
Carnegie Natural Gas Co. George Ahouse 1	¶2	....
South Penn Oil Co. John Flink hrs. 4	2	....
Cabell County—		
Walton Oil & Gas Co. William Walton 5 . . ..|	¶1¼	....
Shipe & Oliphant Joseph Merritt 1	*	....
Wirt County—		
Southern Oil Co. C. C. Deweese 1.	¶1¼	....
Federal Oil & Gas Co. Roberts, Pell & Co. 33	2	....
Marshall County—		
Carnegie Natural Gas Co. L. E. Conaway 5	2	....
Guy Patterson A. Howard hrs. 1 ..	¶1½	....
Monongalia County—		
Carnegie Natural Gas Co. D. R. Wright 1 . . ..|	¶2¼	....
Hope Natural Gas Co. Sarah Thomas 1	¶3	....
Doddridge County—		
Trainer & Travis C. Ford 1	3	....
Wood County—		
Congdon & Co. Elgie Grant 11	2	....
Tyler County—		
Carnegie Natural Gas Co. Rachel Hissam 4	¶1	....
Lewis County—		
Pittsburgh & West Virginia Gas Co. R. B. Brinkley 1	*	....

KENTUCKY

Warren County—		
Petroleum Exploration Co. N. L. Miller 1	*	1416
F. F. Blanchard C. H. Daugherty 1	*	1335
Allen County—		
Helka Development Co. E. Sanders 9	2	400
W. G. Moorman Receiver J. W. Frost 12	2	364
F. J. Tapp Ike Hill 1	3	474
Mealey & Mealey M. J. Lewis 19..	*	356
M. S. H. Oil Co. Earl Oliver 2	*	370
Sam H. Bradshaw Phoebe Oliver 14	2	292
Barren County—		
Star Oil & Gas Co. Richardson 7..	15	403
Jacob Best Trustee Sanders 5.....	5	....
Houchins Leasehold Co. Mayfield 14	5	....
R. B. Tyler White 8	3	....
J. W. Porter McGlochlin 18	3	....
L. J. Emery, Jr., Son Co. Martin 3	*	....
Hiland Oil & Gas Co. W. D. Beals 1	*	....
Johnson-Magoffin Counties—		
The Wilson Oil Co. Kelly Owens 1	5	....
Lee-Owsley Counties—		
Combs Bros. Development Co. Jack Evans 3	5	....
Estill County—		
Superior Oil Corp. Simp Horn 9	10	....
Simp Horn 10	10	....
Wood Oil Co. William Neal 7	12	....
Ownesboro Field—		
J. W. Lowman & Co. J. Bob Ellis 3	15	750
Leeper Oil Co. J. S. Collier 1.....	10	....
Penn-Indiana Oil Synd. W. Griffith 2	*	....
Chicago Petroleum Synd. Guenther-Gant 7	*	....
White Plains Oil & Gas Co. J. J. Midkiff 4	10	....
J. B. Ellis 2	10	....
Lawrence-Johnson Counties—		
Swiss Oil Corp. P. P. Holbrook 43	10	....
Sanford Lyon 31	10	....
C. K. Dobyne No. 1, tract 20	5	....
Caney Sparks 11	5	....
George Evans 18	5	....
George Evans 19	4	....

SOUTHEASTERN OHIO

Washington County—		
The Logan Gas Co. Lizzie Lazure 2	¶½	....
Preston Oil Co. C. C. Pugh 8	10	....
Dent & Co. Charles Robinson 3....|	¶5½	....
Sams & Co. L. & T. D. Barrett 1.	*	....
O. O. Kinsey H. A. Smithson 11 ...	2	....
Peoples Bank & Trust Co. Reeder Estate 11	2	....
W. F. Meister & Co. John Wolfert 15	*	500
Charles Dailey & Co. O. O. Newlin 4	*	....
Morgan County—		
The Pure Oil Co. G. F. Williams 3	10	....
G. F. Williams 4	5	....
The Sun Co. W. K. Kirkwood 1 . ..	5	....
Cameron Co. Wesley Norton 1 . ..	¶¼	....
Bowman Oil & Gas Co. Clyde Surrier 1 . . ..|	¶1¼	....
Noble County—		
Hall & Co. Hall 1	2	....
Clyde Hucheson & Co. A. E. Warner 3	2	....
O. P. Sheets & Co. Andrews Estardt 1	*	....
A. E. Ricker & Co. John Boyd 4 ..	*	....
Columbiana County—		
McDonald & Dohrman H. H. Thomas 5	2	....

CENTRAL OHIO

Licking County—		
Ed. H. Everett Co. U. G. Porter 4.	90	....
The Pure Oil Co. L. M. Cartnal 2.	25	....
Planet Oil Co. W. H. Geakley 5 ..	25	....
Smith & Hazlett Austin Orr 5	12	....
C. E. Metzger & Co. U. A. Morgan 1 . . ..|	¶1½	....
Wehrle Interests Mrs. Long 1.....	¶¼	....
Midland Oil Co. W. & O. Hupp 1.	*	....
Perry County—		
Holliday Oil & Gas Co. Sam Paxton 5	20	....
Holden & Co. Ridge Bros. 23	2	....
Ohio Fuel Supply Co. Franklin Bank Co. 5	10	....
Vinton County—		
Schaefer Oil Co. Louisa Cline 1 ...	12	....
Co-operative Oil Co. W. W. Beckley 2	6	....
Gordon Oil Co. T. G. Cline 1	5	....
Medina County—		
The Logan Gas Co. Nick Granson 1 . . ..|	¶3¼	....
Ohio Fuel Gas Co. Albert Trefany 1 . . ..|	¶1¼	....
H. A. Dempsey D. Rose 39	5	450
Athens County—		
Ronshausen & Co. W. Whaley 7 ...	5	....
Bicekl & Co. Anna Walsh 8	¶½	....
Hawkins & Co. John Zumbaugh 1..	¶½	....
Hocking County—		
Sunday Creek Coal Co. Fee 137....	¶1	....
Marlow Oil & Gas Co. Frank Linton 4	¶½	....
Knox County—		
East Ohio Gas Co. A. Arwiller 2 ..	¶1½	....
Upham Gas Co. Catherine Logsdon 1	¶1	....
Ashland County—		
The Logan Gas Co. P. C. Cowan 5 . . ..|	¶1½	....
East Ohio Gas Co. C. W. Frick 2.	¶1	....
Coshocton County—		
The Logan Gas Co. Wm. Johnson 1	¶¼	....
Klise-Eckstein-McCann Co. M. G. Wright 1	*	....
Cuyahoga County—		
The Logan Gas Co. E. & F. Rose 1 . . ..|	¶1¼	....
East Ohio Gas Co. Paul Yanke 1..	*	2938
Holmes County—		
East Ohio Gas Co. Sanford Carpenter 1	*	....
Leonard Oil & Gas Co. Byron Middaugh 1 . .....|	¶2¼	....
Guernsey County—		
The Logan Gas Co. Seward Williams 4	¶4	....
Richland County—		
G. H. Schrack & L. A. Keith 1	*	....

NORTHWESTERN OHIO

Hancock County—		
Harpst Bros. M. H. Deeds 23	35	1390
Seneca County—		
Murphy & Son D. Hunker 1	30	1457
Sandusky County—		
The Ohio Oil Co. John H. Meyers 9	25	1372
Wood County—		
William G. Grolle H. Grolle 3	7	1251
Auglaize County—		
Campbell & Co. Ira Price 1	*	1515

ILLINOIS

Clark County—		
Mahutska Oil Co. Mary McClelland 4	70	1495
W. C. McBride, Inc. James Rush 24	25	1360
Terre Haute Oil Co. Chas. McFarland 2	12	1318
Charles E. King N. B. Lee 6	2	398
Crawford County—		
Abbott & Co. L. M. Highsmith 1..	10	964
McNalley & Starr Wmelia E. Josephs 7	5	1475
Peoples Banking & Trust Co. Silas Wilkins 4	¶2	1020

MICHIGAN

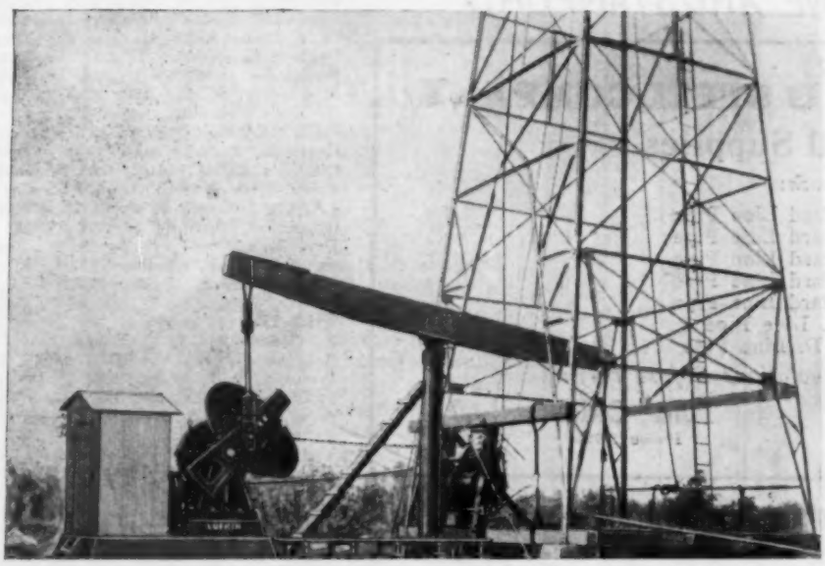
Saginaw County—		
Saginew Prospecting Co. Deindorff Woods 2	10	1821
Bliss Petroleum Co. Boldebuck 1 ..	*	1926

The Last Word in Pumping Economy

—In less than two years time and on the strength of radically improved performance, of efficiency, economy, and safety

The LUFKIN Pumping Unit and Hoist

Has grown in favor from obscurity to extensive use:— There are fields and leases in Oklahoma and Texas that are now practically 100% Lufkin Units.



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TULSA, OKLAHOMA.

WILDCATS

West Texas Wildcats

COMPLETIONS

Company, Well and Location	Initial Production Bbls.	Depth
Howard County—		
Deep Rock Oil Co.'s Scott 1	*	3605
Marland Oil Co.'s Otis Chalk 1 . . .	55	1610
Mitchell County—		
Owen-Sloan Oil Co.'s C. P. Conway 1	†	365
Sutton County—		
Chesapeake Oil Co.'s Clarkson-Allison 1	*	3512

DRILLING REPORT

ANDREWS COUNTY—Amon G. Carter & Henry Zweifel's Cowden 1, lcn. Zweifel et al's Means 1, lcn.

BREWSTER COUNTY — Green Valley Oil Corp.'s J. P. Wilson 1, sd 2175 ft. John Roseborough et al's Skinner 1, sd 750 ft.

COCHRAN COUNTY—Whicker-Bledsoe et al's Landon 1, dk.

COKE COUNTY—Lipan Oil Co.'s E. C. Rawlings 1, sd 2640 ft.

CONCHO COUNTY — Culbertson Bros. & Co.'s W. G. See 1, spd and sd. K. Kimberlin et al's Schultz 1, dr 1460 ft. E. Mays et al's Wilson-Hartgrove 1, lcn.

CRANE COUNTY—Cranfill Bros. Oil Co.'s P. J. Lea 1, rig. Duffey Bros. et al's Cowden 1, lcn. Gulf Prod. Co.'s University 1, rig; J. T. McElroy 2, rig; McElroy 3, dr 360 ft; Grier-McElroy 1, 2 and 3, rigs. Magnolia Pet. Co. et al's University-Church 2, rig; University 1, top salt 1170 ft, dr 1610 ft. Marland Oil Co.'s Hughes-Gibbs 1, rig; W. F. Durham 1, running tubing after plugging back from 2667 to 2642 ft. Zoch & Marland Oil Co.'s Hughes-Keith 2, rig. The Texas Co.'s Union 1-F, elevation 2431 ft, top salt 690 ft, flowing by small heads while testing oil pay 3014-16 ft; H. M. King 2, spudding. Tidal Oil Co.'s University 1, fsh 555 ft.

CROCKETT COUNTY—The California Co.'s University 2, dr by cas 2595 ft. Cranfill Bros. Oil Co.'s Harris 1, lcn. Carl Cromwell et al's Powell 5, dr 2585 ft. Gulf Prod. Co.'s Powell 4-A, top salt 1165 ft, dr 2235 ft; Powell 5-A, top salt 1155 ft, dr 1640 ft. J. K. Hughes Dev. Co.'s Powell 2-A, dr 695 ft; Powell 3-A, rig; Powell 1-B, top lime 2596 ft, dr with 2000 ft oih 2635-42 ft. Humble & Marland Oil Co.'s Powell 8-A, top salt 1155 ft, dr 2070 ft; Powell 9, fsh 2530 ft; Powell 10, ur 12½-inch cas 795 ft. Magnolia Pet. Co.'s Shannon 1, dr 4275 ft. Marland Oil Co. & H. Wallace's J. S. Pierce 1, lcn. W. M. Schaffer et al's University 1, fsh cas after shot 2191 ft. Simon et al's Shannon 1, dr tools 1240 ft. J. D. Young et al's Robt. Massie 1, dr 1500 ft. Young & Cromwell's Shannon 1, lcn. F. P. Zoch & Marland Oil Co.'s University 1, sd 2005 ft. H. F. Wilcox O. & G. Co.'s University 1, dr 1950 ft.

CULBERSON COUNTY—Big Lake Oil Co. et al's C. L. Cass 1, lcn. Deep Rock Oil Co.'s TP Fee 1, elevation 3736 ft, dr 2145 ft. Pure Oil Co.'s Mrs. Quaid 1, elevation 3919 ft, trace oil 4275-4305 ft, dr 4825 ft.

JEFF DAVIS COUNTY—Herbert Oil Co.'s T. M. Wingo 1, co 3000 ft. Humble O. & R. Co.'s McCutcheon 1, dr 1720 ft. J. K. Hughes Dev. Co.'s J. Z. Means 1, rig; Means 2, lcn.

ECTOR COUNTY — J. S. Cosden et al's Johnson 1, top salt 1615 ft, dr 1955 ft; Connell 1-A, dr 180 ft; Connell 1-B, elevation 2820 ft, top salt 1000 ft, dr 2530 ft. The Exploration Co.'s TP Fee 1, cas trouble 1050 ft. Llano Oil Co. et al's Cowden 1, rig. Simms Oil Co.'s W. P. Edwards 1, set 12½-inch cas 785 ft. F. E. Skinner & Eastland Oil Co.'s J. W. Buchanan 1, top salt 1330 ft, fsh bit 2280 ft. L. Taliaferro et al's Henderson 1, spd and sd.

FISHER COUNTY—Ideal Oil Co.'s W. F. Martin 1, dr 2255 ft.

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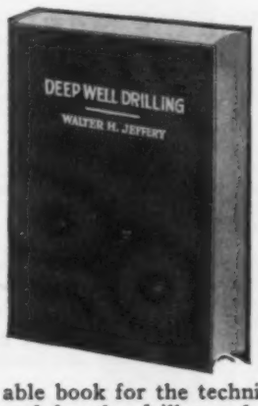
Second Revised Edition

Just Off the Press

By Walter H. Jeffery



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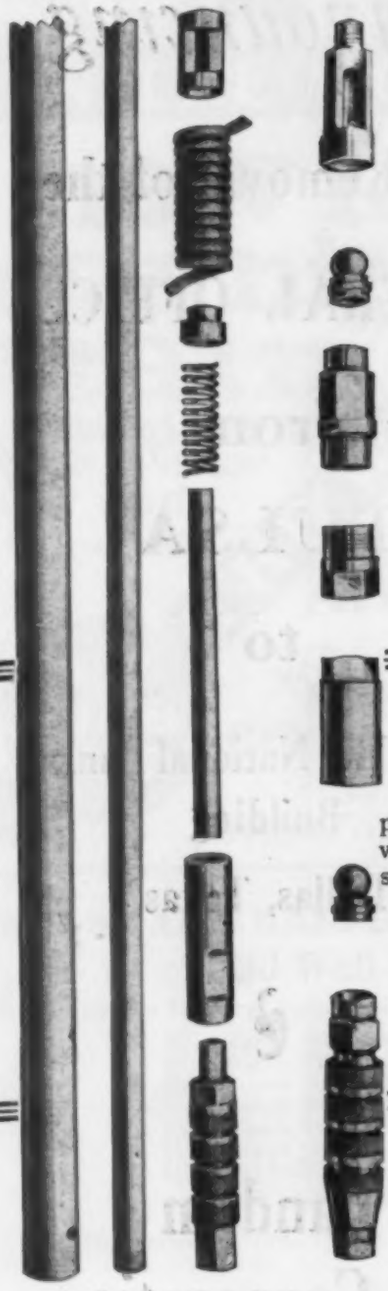

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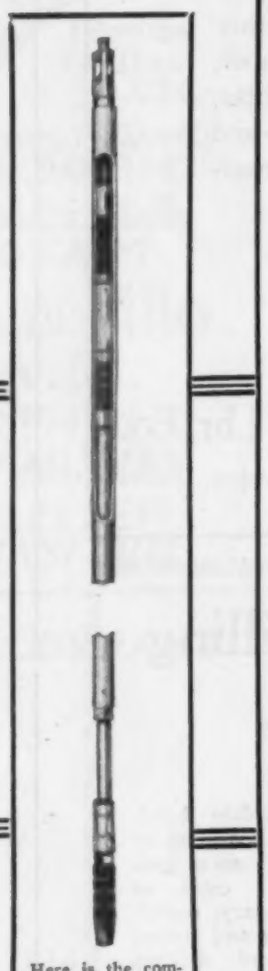

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"Products that cut down your underground overhead"

GAINES COUNTY—Hucony Oil Co.'s Lindsey 1, dr 1510 ft.

GARZA COUNTY—Deep Rock Oil Co.'s S. M. Swenson 1, ur cas, td 2618 ft. Emerald Oil Co.'s J. M. Boren 1, co bridge after shot 380 quarts 2420-98 ft, td 2600 ft; Connell 1-A, sd 3200 ft.

GLASSCOCK COUNTY — Case-Hoover et al's Sparkman 1, dr 3215 ft. Marland Co. et al's Calder 1, sd 1600 ft.

TOM GREEN COUNTY—M. D. Bryant et al's Llano County Fee 1, fsh 2980 ft. World Oil Co.'s Pulliam 1, dr 1245 ft.

HOCKLEY COUNTY—El Capitan Oil Co.'s Ellwood 1, lcn.

HOWARD COUNTY — Joe Edgar et al's Roberts 1, spd and sd. Lockhart & Co. et al's Dora Roberts 1, spd; W. T. Scott 1, ur 10-inch cas 800 ft; Otis Chalk 1, swabbing 40 bbls oil 1553-86 ft. Magnolia Pet. Co.'s Chalk 2, rig Chalk 3, lcn. Marland Oil Co.'s Chalk 2, sd after shot 1607 ft. Reeves-Apperman et al's H. R. Clay 1, sd 150 ft. Transcontinental Oil Co.'s Roberts 1, dr 3680 ft.

JONES COUNTY — Phillips Pet. Co.'s Joe Winters 1, dr 975 ft. Shaw-Rathke et al's Wm. Bristow 1, sd 590 ft. Marland Oil Co.'s Cox 1, spudding.

KENT COUNTY—The Texas Co.'s Barron 1, set 6⅝-inch cas 3888 ft.

LOVING COUNTY—Lockhart & Co. et al's R. L. Allen 1, top salt 695 ft, dr 1210 ft.

LYNN COUNTY—Hart Oil Corp.'s C. O. Edwards 1, sd 865 ft.

MITCHELL COUNTY—The California Co.'s Foster 1, sd for shot 3000 ft. Magnolia Pet. Co.'s Abrams 1, dr 4195 ft; Mary Foster 2, rig. Mid-Kansas O. & C. Co.'s Ellwood 2, crooked hole 445 ft. Morrison-Thompson et al's Hyman 1, fsh 3150 ft. Owen-Sloan Oil Co.'s C. P. Conway 1-A, lcn. Teas-Stivers et al's Hardee 1, spd and sd.

PECOS COUNTY—Dixie Oil Co.'s Hersheusen 1, dr 5105 ft. Carl Cromwell et al's Scharff-Blackman 1, rig. Transcontinental Oil Co.'s Perry 1, sd 3275 ft. Quinby Oil Co.'s Fort Stockton Townsite 1, sd 2800 ft.

PRESIDIO COUNTY — Hadlock-Miller et al's Tootle 1, sd 2205 ft.

REAGAN COUNTY—H. D. Camp et al's University 1, top salt 1142 ft, dr 2680 ft. Marland Oil Co.'s University 1, lcn. Mascho & Marland Oil Co.'s Sawyer 1, dr 2745 ft. Frank Pickrell & Marland Oil Company's Sawyer 1, fsh 2330 ft. Simon et al's R. A. Walters 1, sd 2030 ft. Texon Oil & Land Co. of Texas' University 1, sec 19, blk 9, top salt 1020 ft, top lime 3025 ft, dr 3030 ft.

REEVES COUNTY—Carl Cromwell's (was Schooler-Slack) TP Fee 1, set 8¼-inch cas and sd 2405 ft. Grisham-Hunter Corp.'s State Fee 1, dr 615 ft. Humble O. & R. Co.'s TP Fee 1, set 5 3/16-inch cas to test show oil 4274 ft, td 4327 ft.

SCHLEICHER COUNTY—Beavers-Leath et al's Whitten 1, spd and sd. Cope-Dalton et al's Sol Myer 1, spd and sd.

SCURRY COUNTY—E. E. Fogelson et al's Bryce 1, sd 1905 ft; Haney 1, lcn. Northwest Co.'s H. P. Welborn 1-A, sd for diamond core drill to go to 5000 ft, td 3428 ft.

STONEWALL COUNTY — Arkansas Fuel Oil Co.'s Craft 1, changing to rotary to go to 5000 ft, td 3665 ft. Swenson Oil Corp.'s Ward 1, sd 3828 ft.

STERLING COUNTY—The California Co.'s Davis 1, sd 3500 ft. Co-Operative Development Co.'s E. W. Douthitt 1-A, dr 2680 ft. The Exploration Co.'s C. A. Broome 1, sd repairs 1260 ft. H. D. Rummel et al's L. T. Clark 3, sd 1175 ft.

TERRELL COUNTY—Sun Oil Co.'s N. M. Scott 1, dk. E. T. Williams et al's Sowden 1, fsh 1260 ft.

TERRY COUNTY — Doc. Gerson et al's Brownfield 1, lcn.

UPTON COUNTY—Cranfill Bros. Oil Co.'s Baker 1, lcn. Dixie Oil Co.'s A. S. Burleson 4, swabbing 60 bbls 2210-61 ft; Burleson 6, top salt 510 ft, dr 735 ft; Burleson 7, lcn; E. S. Hughes 3, dr 230 ft; Hughes 4, rig. W. W. Donnelly & Gerke's Rankin 1, elevation 2550 ft, top salt 1230 ft, dr 1320 ft. W. H. Dunning et al's J. T. McElroy 1-A and 2-A, lcns. Gulf Prod. Co.'s Sanger 1, bailed 5 bbls oil and ¼ bbl water 2811 ft, dr 2840 ft; Mrs. Baker 2, rig. Humble O. & R. Co.'s Ricker-Dodson 1, sd for storage with good show oil and gas at 1980 ft; McElroy 1, spd and

LAYNE

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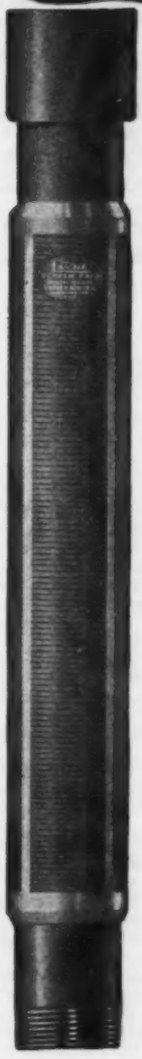

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Curtin Mill Supply Co., HOUSTON, TEXAS
INSTRUMENT DEPARTMENT

sd; A. S. Burleson 1, rig; Burleson 2, lcn. Independent O. & G. Co.'s Emma Wooley 1, swabbing 2025-2130 ft; Wooley 2, spudding; Len Taylor 2, lcn; Taylor 3, 4 and 5, rigs; Taylor 6, spudding; Taylor 7, rig. Marland Oil Co.'s Burleson 9, elevation 2582 ft, top salt 515 ft, fsh 1345 ft; Burleson 10, top salt 555 ft, dr 1345 ft; Burleson 11, top salt 547 ft, dr 800 ft; Burleson 12, dr 300 ft; Burleson 13 to 19, rigs; Burleson 2-A, rig; Sanger 7, swabbing 80 bbls 2224-80 ft; Sanger 8, top salt 603 ft, set 6⅝-inch cas 2082 ft; Sanger 9, 10 and 11, rigs; Shirley 1, lcn. Republic Prod. Co. et al's Baker 3, swabing 40 bbls 29.5 gravity oil after shot 2214-81 ft; Baker 4, lcn. Roxana Pet. Corp.'s Estep 1, top salt 605 ft, dr 1410 ft; Hughes 1, rig; Bowen 1, spudding; Bowen 2, rig. Sartain Bros. & Davis' Mrs. Bull 1, sd 555 ft. Sun Oil Co.'s Burleson 1, top salt 510 ft, dr 1550 ft; Burleson 2, top salt 510 ft, dr 715 ft; Burleson 3, rig; Burleson 4, 5 and 6, lcns. Texas Pacific Coal & Oil Co.'s M. Shirk 1, lcn. The Texas Co.'s Union 1-C, dr 3055 ft; R. King 1, top salt 470 ft, dr 665 ft; King 3, rig; King 4, lcn; King 5, dr 215 ft; Burleson 1, rig; Burleson 2, lcn.

VAL VERDE COUNTY—A. Blume et al's Moore 1, sd 2400 ft. Plateau Oil Co.'s B. S. Harrison 1, sd for cas 2450 ft. Independent Operators' Whitehead 1, sd 3340 ft.

WINKLER COUNTY — Brandon-McCamey et al's TP Fee 1, dr 950 ft. R. S. Matthews et al's Cowden 1, lcn. L. Taliferro et al's Sealy 1, dk. Simon-Ladd et al's Ambrugey 1, rig. R. A. Westbrook & Co.'s T. G. Hendricks 1, sec 42, blk B-5, elevation 2806 ft, top salt 1930 ft, re-setting cas with packer after making several oil flows from pay at 2500-25 ft.

Coastal Wildcats

COMPLETIONS

Company, Well and Location	Initial Production Bbls.	Depth
Chambers County—		
W. C. Moore's Blanke 4.....	*	1300
The Texas Co.'s League 2	*	1430
Jefferson County—		
Houston Oil Co.'s Pipkin Davis 1..	*	2938
Orange County—		
Orange Prod. Co.'s Ocultree 1.....	*	3300

DRILLING REPORT

AUSTIN COUNTY — Valley Oil Co.'s Thompson 1, 30 miles north of Orchard, hole caved; redr 810 ft.

BRAZORIA COUNTY—Roxana Pet. Corp.'s Clemens 2 Clemens dome, standing 2408 ft, cap rock; Allen 2, Allen dome, dr 4766 ft, sandy lime and pyrite.

CHAMBERS COUNTY—Roxana Petroleum Corp.'s State 1, Moss Bluff, bldg boiler foundation. W. C. Moore's Blanke 4, Winnie, abn 1300 ft, gumbo. The Texas Co.'s League 2, 6 miles NW of Wallisville, abn 1430 ft, sandy shale and lime.

FORT BEND COUNTY—Gulf Prod. Co.'s Davis 12, Long Point. The Texas Co.'s Farmer 1, Boling, dr 671 ft, gumbo. Sun Co.'s Farmer 1, Boling, dr 1168 ft, rock. Marland Oil Co. of Texas' Hartfield 1, Needville, lcn.

GOLIAD COUNTY—Houston Oil Co.'s Pettus 2, Goliad, dr 915 ft.

GRIMES COUNTY— Newblock Oil Co.'s Freund 1, sd 2600 ft.

HARRIS COUNTY—Kane Exploration Co.'s Foster Lbr. Co. 1, Huffman, dr 1702 ft, water sand. Kelley et al's Lipper 1, Aldine, dr 2318 ft, gumbo. Benedum & Trees' Kennedy 1, Harmaston, dr 3145 ft, gumbo and lime. Gwyn et al's Cage 1, Huffman, sd 1400 ft, gumbo.

JEFFERSON COUNTY—Gulf Prod. Co.'s Bordages 2, Fannette. Port Arthur Dev. Co.'s West 3, Westbury, dr 2285 ft, rock. Houston Oil Co.'s Pipkin Davis 1, Big Hill, abn 2938 ft; Sun Dyson 3, Big Hill, dr 1150 ft, water sand. Barbe et al's Garrick 1, Beaumont, installing pump, sd 2200 ft, gumbo.

LIBERTY COUNTY—Sun Co.'s Masterson 3, Felicia, dr 2495 ft, water sand. George Leland's Grogan Lbr. Co. 2, 14 miles N of Dayton, sd 345 ft, gumbo. Humble Oil & Ref. Co.'s Welder 3, South Dayton extension, dk. Gulf Prod. Co.'s Beckman 1, South Dayton extension, lcn.

LIVE OAK COUNTY — Mid-Kansas Oil

The Luck of the Crew

IT pays to have a reputation for being lucky. There is something about a favorite of the gods of chance which inspires confidence.

But being lucky in the oil fields isn't always a matter of a guiding star or a tried and proven rabbit's foot. Men who have the habit of bringing in producers depend on something more substantial than a belief that the breaks will come their way.

A skilled handling of the job has turned many a poor bet into a good producer. Extra caution has saved many a junked hole and trained knowledge has brought forth oil where inexperience would have listed a duster.

But first and foremost comes good equipment. Given dependable materials with which to work chances of getting more than an even break are greatly increased. Without the right tools, skill becomes helpless and caution of no avail.

For good equipment and quick service to Texas fields, oil men everywhere will find the Hercules Supply Company a dependable source of supply. A new store has just been opened at Isom in Hutchinson County.

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CENTRIFUGAL

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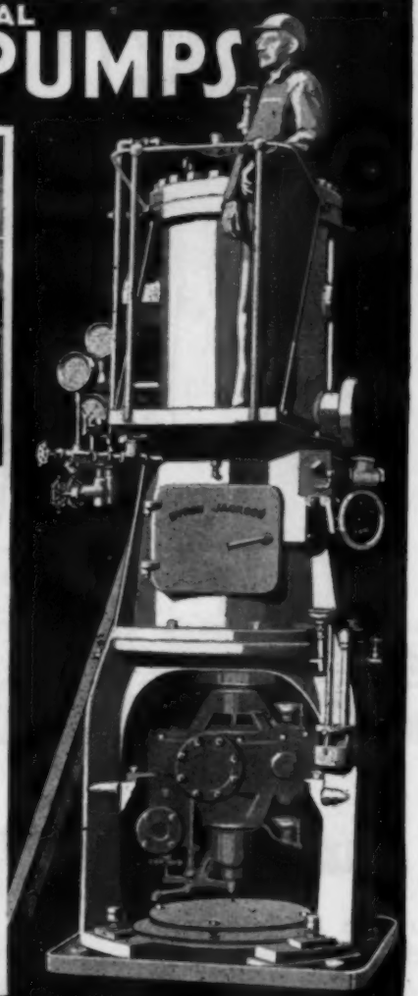

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Houston Oil Co., Camden, Ark.
Indian Refining Co., Lawrence, Ill.
Imperial Refining Co., Ardmore, Okla.
Mariand Refining Co., Ponca City, Okla.
New Orleans Refining Co., Goodhope, La.
Prudential Oil Co., Baltimore, Md.
Roxana Petroleum Corp., Arkansas City, Kans.
Roxana Petroleum Corp., Woodriver, Ill.
Shell Co. of California Wilmington, Calif.
Shell Co. of California Martinez, Calif.
Vulcan Oil Co., Coraopolis, Pa.
White Star Refining Co., Woodriver, Ill.

FOREIGN

Caracasombo Petroleum Co., Curacao, D. W. I.
De Bataafsche Petroleum Maatschapp, Dutch Papua, D. E. I.
John Fair & Co., Sydney, Australia
Societe Anonima Astra Romana, Constantza, Roumania
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The KUEHNE Hinge-Type, Full-Opening Foot Valve is fool-proof, trouble-proof and leak-proof. It is small in size and easy to handle. No lugs or projections on outside to cause it to "hang-up" when it is being lowered into well or excavation. Greater flow—less friction. Full-opening and quick-closing feature eliminates water hammer. More efficient than any foot valve heretofore developed.

Write for further details of this NEW invention

ALAMO IRON WORKS SAN ANTONIO TEXAS

Co.'s J. H. Drummond 1, 8 miles N of Three Rivers, cored water sand, 1400 ft.

MATAGORDA COUNTY—Gulf Prod. Co.'s Craig 5, Hawkinsville; Parkinson 1, Hawkinsville. Humble O. & R. Co.'s Robbins 1, Van Vleek, dr 1750 ft. Rycade Oil Corp.'s Kountze 2, Markham, dr 2962 ft, shale and lime. Houston Gulf Gas Co.'s Kountze 1, 2 miles W of Markham, dr 3560 ft, gumbo and lime.

ORANGE COUNTY — Brownie Barbett's Lake Shore Farm 1, 6 miles SE Terry Field, moving in rig. Orange Prod. Co.'s Ocultree 1, Gum Island, abn 3300 ft.

WHARTON COUNTY — The Texas Co.'s Felder 2, Boling, lcn. Rich-Humphreys' Malone 1, 5 miles W Wharton, dr 720 ft, lime rock.

San Antonio Wildcats

BEXAR COUNTY—George Ginter No. 9 Cotton Mill, pumping 20 bbls. Hamilton No. 12 Hughes, prod. 25 bbls. LeComte et al No. 2 Klein, bailing at 535 ft, slight oil show. W. E. Rutledge No. 1 Brooks, testing at 1050 feet.

BROOKS COUNTY—Benedum et al No. 1 Wormser Bros. dr.

CALDWELL COUNTY—Fred Adams No. 1 Holden, dr at 1925 ft in Austin chalk. Gulf Production Co. No. 1 Alexander, dr. Storey et al No. 1 McConnell, reported abandoned. United North & South Development Co. No. 1 Kelly, dr below 6100 ft; No. 1 Tiller, dr below 6000 feet.

DUVAL COUNTY—Associated Oil Co. No. 1 Sutherland, dr. Barkley-Meadows-Morgan No. 1 King Harper, sur 323, bailing at 1745 ft. Graham et al No. 1 Beall, set cas at 2437 ft to test. Humble Oil & Ref. Co. No. 5 Walsh, dr; No. 1 Dowdy, dr below 2500 ft; No. 6 Walsh, dr; No. 5 Schallert, dr; No. 9 Singer, dr. K. & S. Corporation Nos. 41 and 42 Holbein, section 11, set cas at 2136 ft. Nos. 43, 44, 45, 46, dr. Maddox & Smith No. 1 Palacios, sur 291, prod. 200 bbls. at 1300 ft; No. 2, sur 291, spudded in. Marschison & Fain No. 1 Allen, dr; No. 2 T. Vela, dr. Moody Corp. No. 9 Palacios, blk 20, sur 291, dr. Morgan et al No. 1 Palacios, dr. National Oil Co. No. 1 Allen, dr. Oil Exchange No. 1 Palacios, dr. Simms Oil Co. No. 1 Leyendecker, dr; No. 3 Weil, spud. in.

MEDINA COUNTY—Alamo Drilling Co. No. 1 Kennedy, dr. Arnett Oil Co. No. 4 Nixon, dr. Calif.-Medina Oil Co. No. 1 Rothe, dr. Eastham & Tarver No. 2 Viola Wilson, dr; No. 1 Ward, dr. Golden West Oil Co. No. 1 Courand, dr; No. 6 Schmitt, dr. Grayburg Oil Co. No. 1 Ward, dr. Ina Oil Co. No. 1 Hoffman, dr; No. 1 Finger, dr. Kittle & Townley No. 1 Bendele, dr. Plateau Oil Co. No. 1 Johnson, dr; No. 1 Bendele, dr; No. 1 Odem, dr. Patterson & Patterson No. 1 Longfield, dr. Rand et al No. 1, dr. Reager et al No. 1, dr. Schermerhorn Oil Co., No. 3 Irrigation Co. dr. Tarver & Spreague No. 1 J. O. Redus, ru. Witherspoon Oil Co. No. 1 Adams, dr. Walsh et al No. 1 Saathoff, dr.

ZAPATA COUNTY—Killam No. 1, sur 307, testing. Magnolia Pet. Co. No. 1 Cuerllar, dr. Trees Oil Co. No. 1 Benavides, prep to spud in. Texas Co. No. 3 Jennings, dr.

Arkansas Wildcats

COMPLETION

Ouachita County—
Harrel Trust's Moline Timber Co. 2, 9-12-17 . . . . . * 1682

DRILLING REPORT

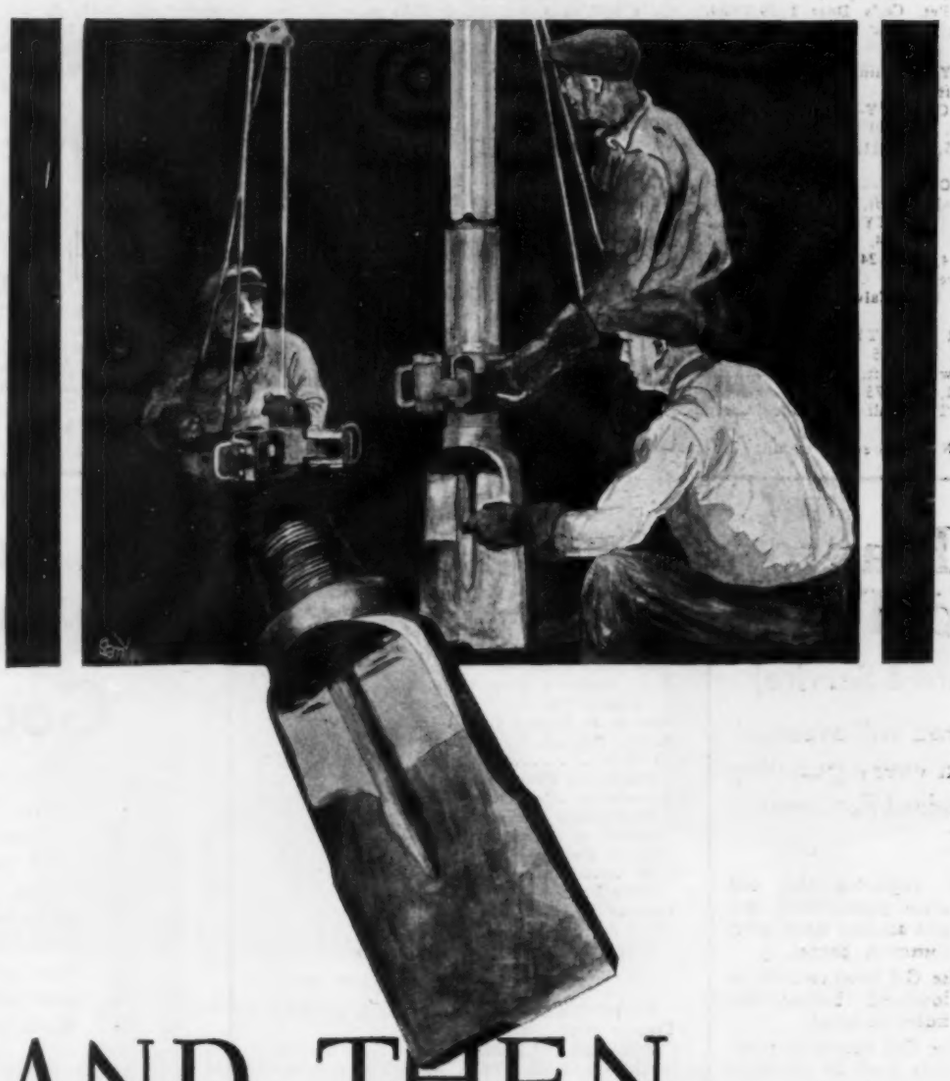
ASHLEY COUNTY—Pine Prairie Oil Co.'s Pine Prairie 2, 1-17-16, dr 3495 ft.

BRADLEY COUNTY—Magnolia Pet. Co.'s Arkansas Timber 1, 35-15-11, setting 13⅜-inch cas 983 ft. McMurray et al's Southern 1, 7-15-11, set 10-inch cas 214 ft. Yount et al's Southern Lumber Co. 1, 2-16-17, dk pat.

CALHOUN COUNTY—Delmar Oil Co.'s Gaibor 1, 16-11-14, dk. Southern Crude Oil Purch. Co.'s Calion 1, 1-16-14, fsh 2818 ft.

CLARK COUNTY—Heath et al's Arnold 1, 12-9-20, sd 830 ft. Wheelen Oil Co.'s Brown 1, 36-10-20, dry 2307 ft.

COLUMBIA COUNTY—H. W. Aarnes' Brown 2, 13-15-20, coring 3540 ft. Kent &



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And now, here it is.

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INTERNATIONAL ISCO SUPPLY COMPANY

Fullenwilder's Wingfield-Moody 1, 18-19-19, sd 2400 ft. Ky-Ark Pet. Co.'s Doss 1 29-19-20, sd 2450 ft. Scott Phillips' Davis 1, 6-18-20, dr 1295 ft.

DREW COUNTY—McClintock et al's Ogle 1, 35-13-5, sd 2397 ft.

HEMPSTEAD COUNTY—Burton et al's Garland 1, 23-10-25, sd 1940 ft. Myers et al's Nichols 2, 17-11-25, dry 1170 ft, dr deeper 1210 ft.

JEFFERSON COUNTY—Decem Oil Co.'s Hensley 1, 7-3-10, sd 2505 ft.

LA FAYETTE COUNTY—Arkansas Fuel Oil Co.'s Allen 4, 18-19-24, dr 1060 ft; Red River Lumber Co. 4, 18-19-24, dr 3300 ft. Gulf Ref. Co.'s Red River Lbr. Co. 1, 10-19-24, dr 650 ft. The Texas Co.'s Calvin 1, 14-17-24, dr 900 ft.

LITTLE RIVER COUNTY—Greeson et al's Waldrip 1, 4-13-21, dr 1125 ft. Grote et al's Allen 1, 2-13-29, sw 2932 ft. Johnson et al's Hawkins 1, 10-11-31, dr 1775 ft.

MILLER COUNTY—Gulf Ref. Co.'s Dorsey 1, 27-17-26, rig.

NEVADA COUNTY—Greeson et al's Tidwell 1, 22-13-21, sd 1200 ft. Humble O. & R. Co.'s Bodcau 4, 9-15-22, dr 2535 ft.

OUACHITA COUNTY—Grayson et al's Reynolds 1, 21-14-17, dk. Louisiana Oil Ref. Corp.'s Culp 1, 22-15-19, coring 1465 ft. Phillips Pet. Co.'s Tatum 1, 9-14-17, sw 3111 ft, to dr deeper. Reynolds et al's Howell 1, 15-14-18, dr 1415 ft. Van Diver et al's Yarbrough 1, 2-14-18, sd 1656 ft.

UNION COUNTY—Grimes & Jones' Alphin 1, 6-18-15, coring 2140 ft. Jones & Murphy's Loutre 1, 5-19-14, set 10-inch cas 130 ft; Union Saw Mill 1, 27-19-14, coring 3231 ft. Kampeter et al's Townes 1, 34-19-11, dr 1610 ft. Natural Gas & Fuel Corp.'s Cottrell 1, 28-18-17, dk. Simms Oil Co.'s Simmons 1, 9-18-13, dr 1503 ft. The Sun Co.'s Brown 9, 8-18-15, coring 3280 ft. Walber et al's Cordell 1, 6-18-13, set 8¼-inch cas 2518 ft. Wingfield et al's Gallagher 1, 10-17-17, dr 2455 ft.

Louisiana Wildcats

COMPLETIONS

Company, Well and Location	Initial Production Bbls.	Depth
Caldwell Parish—		
Humble O. & R. Co. Louisiana Central Lumber Co. 1, 9-11-3e	*	2005
Catahoula Parish—		
Magnolia Pet. Co. (S. B. Goodman) Montgomery 1, 8-10-9e	*	3232
De Soto Parish—		
J. C. Walton's Harp 1, 36-12-11 ..	*	2784
La Salle Parish—		
Spencer & Rhodes Urania 1, 1-10-1e	*	1325
Tunica Pet. Co. L. & A. Oil Co. 3, 19-9-2e	*	1878
Morehouse Parish—		
Boisseau et al's Sullivan 1, 11-21-7e	*	2600
Nachitoches Parish—		
Davidson et al Guellatt 1, 47-7-5....	*	2101
Sabine Parish—		
J. B. Greer Peavy-Wilson 2, 11-5-9w	*	2500
Winn Parish—		
Humble O. & R. Co. L. & A. Oil Co. 7, 12-9-3w	*	1614
Tremont 1, 26-10-1e	*	1557

DRILLING REPORT

BIENVILLE PARISH—Collins & Woodley's Thomas 1, 23-16-10, rig.

BOSSIER PARISH—Benton Synd.'s Bulkley 1, 9-20-13, sd 1475 ft. Collins & Woodley's Antrim 1, 4-21-11, rig. L. & A. Oil Co. 1, 14-23-12, sd 3114 ft. Doern et al's Bolinger 1, 9-22-11, dr 2200 ft. Herndon et al's Burkhalter 1, 17-18-11, dk.

CADDO PARISH—Dixie Oil Co.'s Jolley 1, 27-22-15, dr 4155 ft. Gulf Ref. Co.'s Byrd 1, 2-19-14, sw, show of gas 1854 ft, dr 3275 ft; Muslow 1, 35-21-15, dr 4475 ft. Magnolia Pet. Co.'s Bradford 1, 23-21-15, coring 3675 ft; Dillion 16, 24-21-15, dr 2570 ft; Dillion 17, 24-21-15, dr 2710 ft; Spell 1, 29-21-15, dr 3325 ft. Ohio Oil Co.'s Ardis 1, 1-21-15, plugging back to test gas formation at 3745 ft. The Texas Co.'s C. M. L. 42, 23-21-15, testing 4½-in cas 3700 ft; C. M. L. 43, 23-21-15, sd 3001 ft; Federal-Jeems Bayou B-1, 15-20-16, testing cas 2232 ft.

CALDWELL PARISH—Cherokee Pet. Co.'s Louisiana-Central 1, 10-11-2e, sd 1755 ft. Chal Daniels' Liveley 1, 6-12-4e, bailing cas 1656 ft. Grant et al's Cruse 1, 8-11-4e, sd 1470 ft. Keisker & Simmons' Meridith 1, 38-13-4e, dk. Robbins et al's Beazley 1, 10-11-4e, sd 102 ft. Southern Crude Oil Purch. Co.'s Caldwell Lumber Co. 1, 35-14-5e, dr 215 ft; Caldwell Lumber Co. 2, 1-13-5e, dk. Wright et al's Love 1, 16-11-2e, sd 1625 ft.

CLAIBORNE PARISH—Brown et al's Heard 1, 28-19-5, sd 2500 ft. Gilliland Oil Co.'s Taylor B-10, 14-23-8, wet gas 4332 ft, lubricating to drill deeper. Gulf Ref. Co.'s Crichton 1, 35-19-8, rig. Triangle Drlg. Co.'s Keen 1, 7-19-5, dr 4320 ft.

DE SOTO PARISH—Alden Oil Co.'s Powell 1, 13-11-10, sd 240 ft. Carnahan et al's Hollingsworth 1, 11-4-9w, sd 915 ft. Dixie Oil Co.'s Jenkins 1, 9-12-11, dr 3900 ft. Dresser et al's Williamson 1, 20-15-14, dr 3050 ft. J. P. Evans' Louisiana L. & D. 1, 15-12-14, 4 million cu ft gas at 3050 ft; Sutherlin 1, 20-12-14, 1½ million cu ft gas at 2950 ft. Magnolia Pet. Co.'s Bond 1, 27-12-11, dr 3440 ft. Peer Oil Corp.'s Williams 1, 23-13-13, dr 600 ft. J. C. Walton's Chaffraix 1, 25-12-11, set 6-inch cas 2691 ft, 1½ million cu ft gas 2780 ft.

GRANT PARISH—Bradley & Cazort's Holmes 1, 16-9-1e, sw 1466 ft, to deepen. Fuller et al's Barnes 1, 26-8-5w, dr 1485 ft; Harrison 1, 9-8-5w, dr 3001 ft. Gulf Ref. Co.'s Swope 2, 17-9-1e, sd 1590 ft. Humble O. & R. Co.'s Barnes 1, 26-8-5w, set 10-inch cas 89 ft; Edenborne A-1, 30-9-2w, rig; L. & A. Oil Co. 8, 15-9-2w, sd 1646 ft; L. & A. Oil Co. 9, 27-9-1w, dr 900 ft; L. & A. Oil Co. 10, 13-9-2w, dk; L. & A. Oil Co. 11, 20-9-2w, rig. Hurdley et al's Ball 1, 32-7-1w, dr 1825 ft. Jena Oil Corp.'s White Sulphur 1, 23-8-4e, dk pat. Tunica Pet. Co.'s L. & A. Oil Co. 2, 32-9-1e, dr 805 ft; L. & A. Oil Co. 5, 16-8-1e, set 10-inch cas 97 ft.

JACKSON PARISH—Grigsby & Co.'s Adams 1, 22-17-4w, rig. Houseman et al's Norton 1, 34-15-3w, rig. Louisiana Pet. Corp.'s Theus 1, 20-16-3w, dr 310 ft.

LA SALLE PARISH—Cherokee Pet. Co.'s Louisiana Central Lumber Co. 3, 33-11-3e, dr

The Blanton Sand Trap

(Guaranteed Service)

The Trap you will eventually install on every pumping well as Standard Equipment. BECAUSE

Fully Covered by Patents

IT replaces the old style perforation and gas anchor used with common barrel.

The Oil level cannot be lowered below the holes in head.

The Oil forms a positive seal in perforation and tubing.

IT holds the gas and sand on outside of tubing, preventing sand and gas from entering working barrel.

IT prevents vacuum from effecting ball in standing and traveling valves.

IT eliminates all agitation of fluid permitting sand to settle to bottom.

IT is a proven device by two years actual test on over 30 wells.

Let us send you one, if it is not more efficient and satisfactory than any device you have ever used for this purpose, you to be the judge, we take it back.

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Wichita Falls, Texas.

H. G. Schueler, Sales Agent, 2811 Ave. J.

A Tool That's Made Good

The "Braymer" pattern casing ripper is the ideal tool for ripping casing, either up or down stroke. It is also made as a combination tool which can be used either up or down. Made in all sizes.

Manufactured and sold on its merits for the past five years, it has thousands of satisfied users.

The cut shows the new improved combination tool with up ripper knife taken out; also showing one of the cuttings as it appears after the pipe has been ripped.

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The Beard Foundry & Machine Co.

Arkansas City, Kans.

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(Patented)

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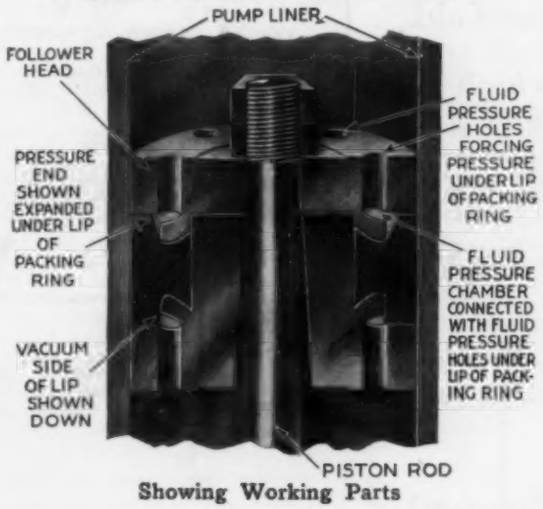
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FOLLOWER HEAD
FLUID PRESSURE HOLES FORCING PRESSURE UNDER LIP OF PACKING RING
PRESSURE END SHOWN EXPANDED UNDER LIP OF PACKING RING
FLUID PRESSURE CHAMBER CONNECTED WITH FLUID PRESSURE HOLES UNDER LIP OF PACKING RING
VACUUM SIDE OF LIP SHOWN DOWN
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Showing Working Parts

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The Difference Is Far Reaching When You Equip With This Piston

No special piston rods required—no change required on the pump to use the Kibele piston. It is made to fit any make of pump, and to pump any and all kinds of fluids.

For rotary drilling slush pumps, mine pumps, marine pumps, boiler feed hot or cold water, oil, gasoline and vacuum pumps. Special material used for acid resisting. The Kibele PATENTED self expanding piston packing sleeve expands to whatever shape the liner may be—barrel shape, out of round, taper—and packs the full length of the stroke of pump without slippage or by pass. Saves the liner many times over the use of other pistons. No adjustment required after the piston is once installed.

We manufacture this piston complete, including packing sleeve, as we have our own rubber plant in connection with our machine shop.

The Kibele Self Expanding Patented Piston will outwear any other piston manufactured—many times over other pistons—proven by some of the largest users of pump equipment.

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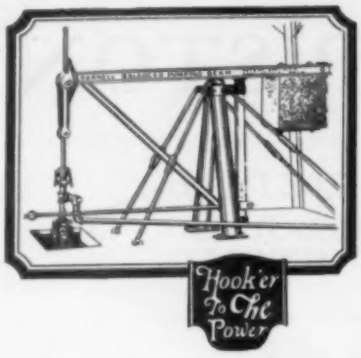

solve my problems in the Burbank District," says the superintendent of one of the largest producers in that field.

"This Beam gives us a long stroke which gets the Production with a slow motion, and gives full travel of the valves."

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Products that cut down your underground overhead

1480 ft. Humble O. & R. Co.'s Louisiana-Central A-2, 22-11-3e, rig. Tunica Pet. Co.'s L. & A. Oil Co. 4, 15-9-3e, dk; L. & A. Oil Co. 6, 22-9-2e, set 10-inch cas 96 ft. Spencer & Rhodes' Urania 2, 1-10-1e, dr 750 ft.

LINCOLN PARISH—Arkansas Fuel Oil Co.'s Cooper 1, 3-20-4w, dr 3080 ft. Buckley & Palmer's Davis 1, 12-20-3w, sd 2075 ft.

MADISON PARISH—Bannon et al"s Yerger 1, 51-16-14, show of oil 1637-39 ft, sd for cas 1700 ft.

MOREHOUSE PARISH—Standard Oil Co.'s I. C. Co. 1, 34-21-8e, dr 65 ft.

NATCHITOCHES PARISH—Brothers et al's Cockfield 1, 78-7-5w, set 10-inch cas 104 ft. Davidson et al's Williams 1, 31-8-5, dr 50 ft. Forrest Trust's Ayers 1, 3-13-7, dr. 2380 ft; Ayers 2, 3-13-7, lcn. J. F. Palmer's Edenborne 1, 4-11-6, sd 2015 ft.

OUACHITA PARISH—Ouachita N. G. & O. Co.'s D'Arbonne 2, 25-19-2e, dr 600 ft.

RAPIDES PARISH—Hincy & Mack's Barrow 1, 29-5-2e, sd 1250 ft. Minnesota Oil Corp.'s Wattermark 1, 7-5-3w, dr 80 ft. Pacholik et al's Voda 1, 12-4-1e, dk.

SABINE PARISH—Emlet et al's Bowman-Hicks 5, 8-7-12, dr 4070 ft; Bowman-Hicks 7, 11-7-14, sd 1260 ft; Sabine Lumber Co. 1, 8-7-1e, dk. Magnolia Pet. Co.'s L. L. L. Co. 1, 16-6-11, lcn. Toro Pet. Co.'s Drake 3, 19-4-11, dr 1525 ft.

TENSAS PARISH — Spencer & Rhodes' Somerset 1, 29-14-12, dk.

UNION PARISH—Arkansas Fuel Oil Co.'s Reeves 1, 14-20-1e, dr 3915 ft. Clark Creek Oil Co.'s Frost-Johnson 1, 18-23-1e, sd 2240 ft; Frost-Johnson 2, 8-23-1e, dk. Rhodes et al's Pickens 1, 22-22-2w, rig.

WEBSTER PARISH—Humble O. & R. Co.'s Cox 1 22-21-10, set 10-inch cas 2793 ft. Magnolia Pet. Co.'s Sexton 1, 32-23-9, dr 1650 ft. R. W. Norton's Josey-Massey 1, 27-21-10, dr 2660 ft. Ohio Oil Co.'s Cox 1, 23-21-10, dr 4780 ft; Holloway 1, 23-21-10, dr 6-inch plug 4254 ft. Smitherman & McDonald's Oakley 1, 29-23-11, dr 4620 ft. Southern Crude Oil Purchasing Co.'s Munn-Wadley 1, 1-22-10, dr 4342 ft. Palmer Corp.'s Crichton 1, 30-20-8, rig.

WINN PARISH—Cedar Creek Pet. Co.'s Sullivan 1, 6-10-2w, sd 1700 ft. J. R. Hale's Eagle 1, 6-10-2w, sd 950 ft. W. T. Hunt's Edenborne 1, 8-9-3w, dr 2250 ft. Ohio Oil Co.'s Edenborne 1, 4-12-1w, dr 1485 ft. Wilson et al's Louisiana-Central 1, 2-13-1e, dr 1950 ft.

Northern California Wildcats

COMPLETIONS

Company, Well and Location	Initial Production Bbls.	Depth
KERN COUNTY		
Gould Hills—		
Hastain-Purman's No. 1.....	6	2185
SAN LUIS OBISPO COUNTY		
Portland Pet. Co.'s No. 1.....	*	2540
NAPA COUNTY		
Berryeese Pet. Co.'s No. 1.....	½	360

DRILLING REPORT
KERN COUNTY

ANTELOPE PLAINS—Marland Oil Co.'s Lazard 1, dr 5240 ft. Union Oil Co.'s Theta 1, dr 2845 ft.

DEVILS DEN—Devils Den Prod. Co.'s No. 4, dr 278 ft; No. 5, dr 154 ft. Marathon Oil Co.'s No. 1, little gas, 4365 ft. Robins Oil Co.'s No. 1, dr 1600 ft.

GOULD HILLS — Mendocino-Midway Oil Co.'s No. 1, bailing 1770 ft. Rhoads Oil Co.'s No. 1, skidded rig to new lcn, 400 ft west.

ROSEDALE—A. G. Schwartz's No. 1, dr 3770 ft.

TEMBLOR HILLS—Hovey Hills Oil Co.'s No. 1, sd 2510 ft. Fortuna Oil Co.'s No. 1, ready to recement, 2070 ft.

WASCO—Main Oil Co.'s No. 1, sd 5304 ft. Main Oil Co.'s No. 2, sd 5276 ft.

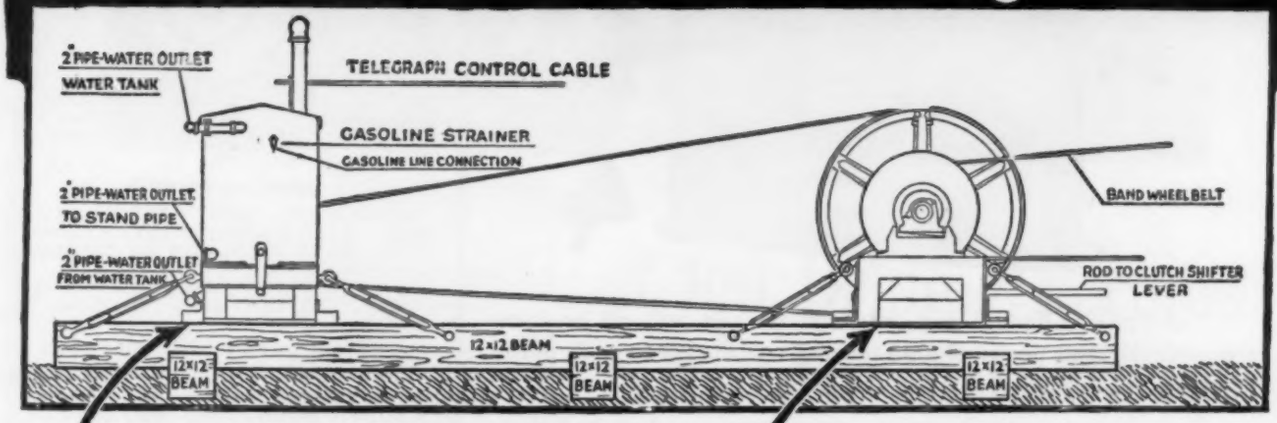
EASTERN KERN COUNTY—Crusaders Oil Co.'s No. 1, dr 2200 ft; No. 1, r 670 ft.

ELK HILLS—Interstate Oil Corp.'s No. 1, sd 5156 ft. Naval Reserve Oil Co.'s No. 1, sd 3767 ft. North Elk Hills Oil Co.'s No. 1, sd 4002 ft.

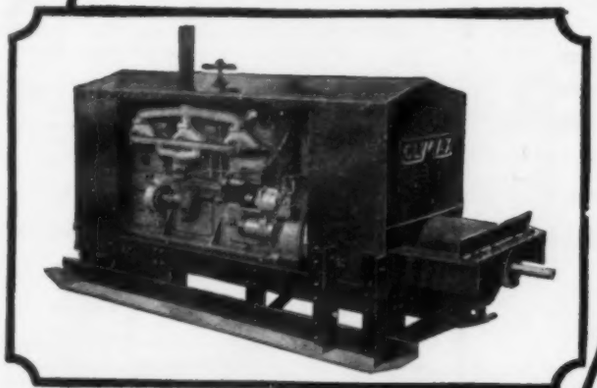
McKITTRICK—Ridge Oil Co.'s No. 1, re-dr

Where Water is Scarce and Fuel Costly

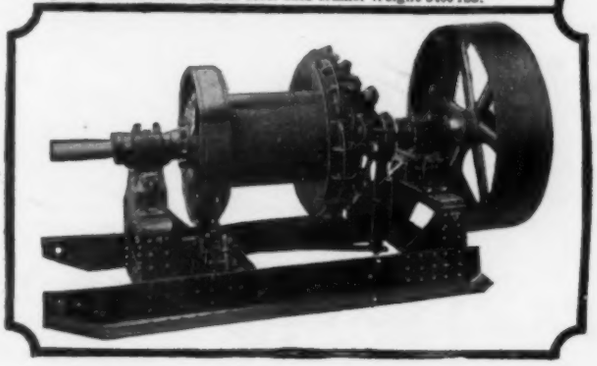
—Use CLIMAX Cable Drilling Units



Typical layout of Climax Cable Drilling Unit showing Drilling Engine and Reversing Clutch



Climax Drilling Engine 6 Cylinder, 6x7 in., Climax Engine, equipped to use gas or gasoline. Equipped with electric-starting motor, vacuum feed fuel pump, built-in governor, water pump, ignition equipment, telegraphic control, etc. Driving pulley 17 in. diameter, with 12 in. face. Extension on drive shaft for forge drive pulley. Engine mounted on structural steel skid frame. Weight 5400 lbs.



Climax Reverse Clutch Unit May be driven forward or reverse through 2 clutches. Picks up load without undue shock or jar. Neutral brake holds load stationary. Clutch and brake operated by one lever, with extension running to derrick floor. Heavy structural steel skid frame. Weight 7200 lbs.

Operating conditions that are discouraging and costly for users of steam, cause no trouble nor delay for Climax operators. They have no worry over water scarcity, no bother hauling, no boiler troubles, no expense and costly delays due to poor water. They have no fuel problem, as the Climax Engine is equipped to run on either gas or gasoline. Telegraphic control to the derrick floor saves attendant's expense. No time is wasted in moving, setting or starting. No expense when not in service — when drilling stops, expense stops.

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made by

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California Field Headquarters:
Coast Machinery Corp., 464-66 East 3rd St., Los Angeles, Calif.

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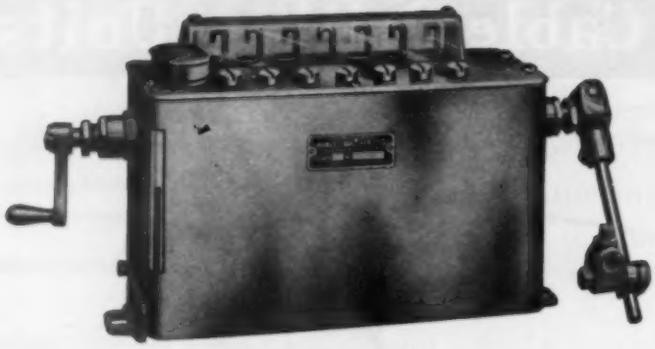


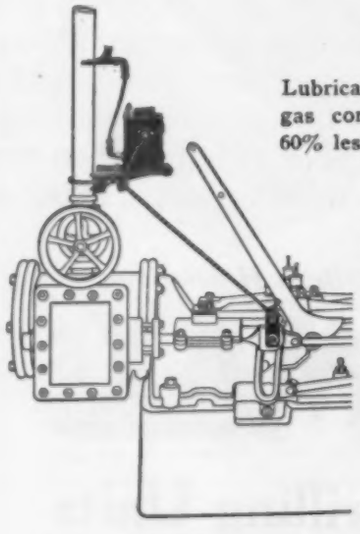
Lubricate cylinders and bearings of gas and oil engines economically and positively, measuring out the oil to each point just as it is needed—no more—no less.

Entirely automatic in action—start, stop, speed up and slow down with the engine—and always supply oil in proportion to the engine's speed.

The most inexperienced helper can take care of them, for after the supply of oil is adjusted to meet the needs of your engine, there is nothing to do except to keep the reservoir supplied with oil.

Easily installed on all makes of oil and gas engines.

Write for information regarding complete fittings for your engines.



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Lubricate drilling engines, mudhogs, air and gas compressors automatically, using 30 to 60% less oil than ordinary lubricators.

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We furnish (when desired) special brackets and fittings for installing on Oil Well, Ajax, Acme, Warren and other drilling engines. Anyone can make the installation, in the field, in less than half an hour. No machine work, pipe fitting or thread cutting necessary.

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2600 ft. Sisson-Wisdom Co.'s No. 1, sd cement 650 ft.

SUNSET DISTRICT — Bell-Wrightsman's No. 1, sd 5335 ft. Fresno-Sunmaid's No. 1, sd 4200 ft. King G. Gillette's No. 1, sd 2100 ft. General Pet. Corp.'s No. 1, dr 1120 ft. Milham Exploration Co.'s No. 2, dr 1420 ft. Shell Co.'s No. 1, dr 3152 ft. Union Oil Co.'s No. 1, trying to dr 5240 ft.

FRESNO COUNTY

CLOVIS—Fresno-Madera Oil Co.'s No. 1, sd 3760 ft. Taylor Pet. Co.'s No. 1, dr 1390 ft.

WARTHAM—Bald Mountain Drilling Co.'s No. 1, dr 504 ft.

HURON—Associated Oil Co.'s No. 1, fsh 2260 ft.

KERMAN—Associated Oil Co.'s No. 1, sd 5735 ft.

RAISIN CITY—Fresno-United Oil Co.'s No. 3, sd 3490 ft.

KINGS COUNTY

KETTLEMAN HILLS—Bolsa Chica Oil Co.'s No. 1, dr 2186 ft . Marland Oil Co.'s No. 1, milling on cas roller 5570 ft. Hugh McPhail's No. 1, dr 1970 ft. So. Coalinga Oil Co.'s No. 1, dr 1200 ft.

VENTURA COUNTY

CAMARILLO—Gentry Oil Corp.'s Camarillo 1, sd 1278 ft. Sentinel Oil Co.'s Camarillo 1, rep rig, 150 ft. Standard Oil Co.'s Camarillo 1, dr 890 ft.

CASITAS-OJAI — Miley Exploration Co.'s Casitas 2, hole caving 310 ft. Rio Grande Oil Co.'s Canet 1, fsh 692 ft.

MOORPARK—Shell Co.'s Berlywood 1, dr 4536 ft.

MONTALVO—Standard Oil Co.'s Valentine dr 2126 ft.

SOUTH MOUNTAIN — Ring Pet. Corp.'s Converse 1, sd 3760 ft.

PIRU CANYON—R. F. Bishop's well, dr 460 ft. Henderson Pet. Co.'s No. 27, dr 320 ft. Hopper Canyon's No. 1, co 4631 ft.

SESPE-FILMORE—Sespe Oil Co.'s Smith Bros. 2, idle 4060 ft. Sentinel Oil Co.'s No. 1, dr 540 ft.

VENTURA—Associated Oil Co.'s McGonigle 1, dr 3920 ft. Chanslor-Canfield's Hobson 1, dr 5000 ft. Milham Exploration's Sexton 1, dr 5537 ft.

SANTA BARBARA COUNTY

SUMMERLAND—Geo. F. Becker's No. 1, dr 2310 ft.

GOLETA—Miley Exploration Co.'s No. 1, bldg roads and grading.

ORCUTT—West Penn Prod. Co.'s No. 1, cmt 350 ft.

CAT CANYON—Standard Oil Co.'s P. U. 1, dr 678 ft.

SAN LUIS OBISPO COUNTY — Arroyo Grande Pet. Co.'s No. 1, re-dr 3660 ft. Barneyberg Oil Corp.'s No. 1, trying to locate water 4486 ft. Panorama Oil Co.'s No. 1, dr 1980 ft. Waklin Pet. Co.'s No. 1, ready to dr 2431 ft.

MONTEREY COUNTY — Harriman-Jones Oil Co.'s well, dr 4400 ft. Pyramid Oil Co.'s No. 1, dr. Danish Oil & Dev. Co.'s No. 1, sd 820 ft. Pan-American Pet. Co.'s No. 1, dr 1540 ft. Santa Lucia Oil Co.'s No. 1, idle 1170 ft.

TULARE COUNTY—Martin Pet. Co.'s No. 1, dr 1420 ft. Josephine E. Neame's No. 1, dr 1900 ft.

YOLO COUNTY—San Martinez Oil Co.'s No. 1, ready to make test 6175 ft.

SONOMA COUNTY—Shell Co.'s Murphy 1, dr 1743 ft.

ALAMEDA COUNTY—Brady Sureshot Oil Co.'s No. 1, sd 266 ft. J. E. Burney Synd.'s No. 1, wtg on rig rep., 360 ft. Calhoma Oil Co.'s No. 1, carrying 10-inch 500 ft. H. J. Craig's No. 1, will set 8¼-inch and deepen 500 ft. Kent & Garth's No. 1, lcn. Livermore Valley's No. 1, abn 758 ft. Thomas & Hammel's No. 1, dr 830 ft.

COLOUSA COUNTY — Amalgamated Oil Synd.'s No. 1, dr 2800 ft. W. B. Brown & Co.'s No. 1, dr 550 ft. S. H. Keoughan's No. 1, dr 3100 ft. Prize Oil & Gas Co.'s No. 1, sd 875 ft.

CONTRA COSTA COUNTY—W. M. Edward's No. 1, gas showing 1750 ft. Elsinore Oil Co.'s No. 1, sd 500 ft. Leachman & Marshall's No. 1, sd 1625 ft.

DEL NORTE COUNTY—North Coast Refining Co.'s No. 1, sd 1225 ft.

HUMBOLDT COUNTY—Eureka Oil Co.'s

Cores obtained by Sullivan Diamond Drills in Texas

Top Picture: Sullivan Diamond Drill boring for oil at Van Horne, Texas. Bottom Picture: Sullivan "CN" Drill driven by Fordson kerosene engine

4,400 Drilling Permits For Texas

In the first five months of 1926, Texas has issued 4,400 permits for oil drilling—1,000 more than for the same period last year. Texas is now starting almost as many wells as Oklahoma, Kansas, Louisiana, Arkansas, California, and the mountain states combined.

What a lot of money is at stake in "finding the oil." What a lot of money can be saved by accurate underground information of the property to be drilled.

Diamond Core Drills

tell you exactly where the oil lies, exactly how far down it is and exactly the nature of the overlying strata. Cores brought up by these drills are actual samples of your property—conclusive evidence of its value—no matter how hard or how soft the formation, or how deep you have to drill.

For deep test work in Texas, the "P-2" and "F K" drills are especially adapted. The "P-2" will go to 4000 feet and the "F K" has taken core at 6700 feet. Shallow structure testing is economically done by the "C N" or "N" portable outfits, which have capacities to 2500 feet and are driven by Fordson kerosene engines.

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for shallow structure drilling, deep tests, and development work. Don't you want to know more about them?

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No. 1, dr 350 ft. Humboldt Oil Co.'s No. 1, sd 2255 ft.

MERCED COUNTY—H. L. Kuhn's No. 2-A, dr 300 ft.

NAPA COUNTY—Berryessa Pet. Co.'s No. 2, dr 390 ft. Griffiths Oil Co.'s No. 1, dr 2000 ft.

SACRAMENTO COUNTY—Associated Dev. Co.'s No. 1, sd 1916 ft. Central Pet. Co.'s No. 1, sd 2960 ft.

SAN BENITO COUNTY—Henry Harper's Faix 1, dr 1865 ft. Homestake Oil Co.'s No. 1, dr 460 ft.

SAN JOAQUIN COUNTY — Pacific Pet. Prod.'s No. 1, sd 1950 ft. Affiliated Oil Co.'s No. 1, sd 960 ft.

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It isn't an accident that tools made by us are of the best quality . . . It is our watchword . . . . We rigidly inspect all material, workmanship, etc., to be sure you get the best. When you order from us and want it Quick you get it Quick. Ask our customers.

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Senco Oil Gauger

SANTA CLARA COUNTY—Alfred Tonally's No. 1, will test 2235 ft.

SANTA CRUZ COUNTY—Danish Oil & Dev. Co.'s No. 1, dr 2975 ft. Marik Oil Co.'s No. 1, spd 200 ft. Edward Payette's Hughes 1, dr 910 ft. Calahan & Waters' Hughes ranch 1, dr 610 ft. Laveaja Trust's No. 1, dr 1965 ft. Swanton Improvement Co.'s No. 1, dr 610 ft.

STANISLAUS COUNTY—J. G. Travers' No. 1, dr 1400 ft.

SUTTER COUNTY—Sutter-Butte Oil Co.'s No. 1, dr 2910 ft.

YUBA COUNTY—Thos. M. Blake's No. 1, sd 780 ft.

Southern California Wildcats

ALAMITOS HEIGHTS—Umpire Pet. Co.'s Judson 1, permit pending.

BELLFLOWER—Calpetro Producers Synd.'s No. 1, sd 4420 ft. Calperto Producers Synd.'s No. 2, sd 4774 ft. Marine Oil Co.p.'s Strong 1, rigged up.

BURBANK—Jeffries-Overton's No. 1, sd 980 ft; No. 2, rig completed.

BIXBY HILLS—National Security Co.'s No. 1, sd 5151 ft. Orange Pet. Co.'s No. 1, sd 2820 ft.

CLEARWATER—Featherstone-Preston's No. 1, rigging rotary.

CLAREMONT—Claremont Oil & Gas Co.'s No. 1, co 1050 ft.

EAGLE ROCK—Calwin Oil Co.'s No. 1, dr 5922 ft.

EL SEGUNDO—Union Oil Co.'s Howland 1, coring 3500 ft.

HAWTHORNE—Winwell Oil Co.'s Dome, bailing some oil at 5586 ft.

IRVINE—Calny Oil Co.'s Irvine 1, sd 4247 ft.

HYDE PARK—Associated Oil Co.'s Cypress 1, rig.

LANCASTER—Rudd-Assmussen's No. 1, will lower 10-inch to bottom.

LONG BEACH—Miller-Haley Extension's No. 1, dr 4000 ft.

MANHATTAN—Julian Pet. Corp.'s Trust 1, dr 4945 ft. Manhattan-Pacific's Bardeen 1, testing 4409 ft. Redondo Community's M. G. E. 1, rig.

MAYWOOD—Magnolia Pet. Synd.'s Tweedy 1, sd 4442 ft.

NEWHALL-SAUGUS—Mailand Oil Co.'s Wickham 1, dr 3965 ft. Milham Exploration Co.'s Conroy 2, sd 3985 ft. W. W. Stabler's Castaic 1, sd 1970 ft. Temple-Lefevre's Castiac 1, sd 2107 ft. Union Oil Co.'s Saugus 1, dr 3378 ft.

PACOIMA—W. O. Brubaker's Fernando 1, fsh 2698 ft.

PLAYA DEL REY—Milham Exploration Co.'s No. 2, sd 5462 ft.

PUENTE—Barnsdall Oil Co.'s Merlo 1, dr 3225 ft.

RESEDA-ZELZAH—Petroleum Securities' Sesnon 1, dr 2100 ft.

SAN FERNANDO—Standard Oil Co.'s University 1, dr 3145 ft.

SAN JOSE HILLS—Bardeen Oil Co.'s Didier 3, sd 1938 ft. D. & B. Oil Co.'s Amar 1, dr 2-60 ft.

SAN JUAN CAPISTRANO—A. P. & K. Oil Synd.'s No. 1, sd 2135 ft. California Pet. Dev. Co.'s No. 1, rig.

TELEGRAPH CANYON—Quadra Pet. Co.'s M. J. M. 1, dr 3345 ft.

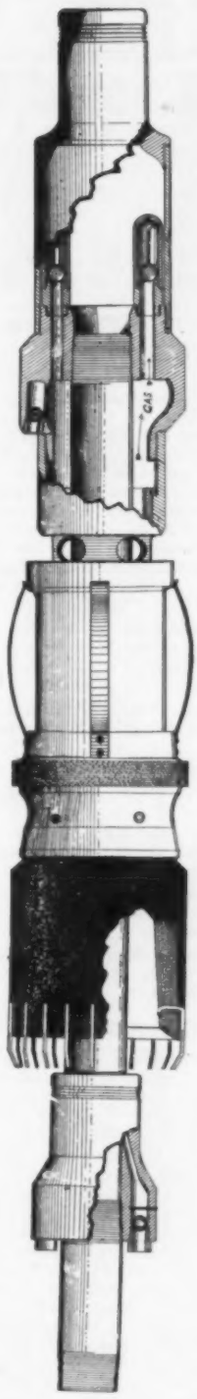
TOPANGO CANYON—Standard Oil Co.'s Austin 1, dr 720 ft.

VAN NUYS—Van Nuys Community Oil Co.'s No. 1, sd 3701 ft.

RIVERSIDE COUNTY—Corona Oil & Gas Test's No. 1, dr 980 ft. Spindletop Oil Synd.'s No. 1, dr 2515 ft. Trabuco Canyon Oil Co.'s No. 1, co 1198 ft.

SAN BERNARDINO CO.—Arrowhead Dev. Co.'s No. 1, dr 1490 ft. Burgess-Goodale's Riggins 1, dr 3650 ft. Como Oil Co.'s Cajon 1, idle 1380 ft. Colton Terrace Oil Co.'s No. 1, dr 1050 ft. Dome of Chino Valley's M&J No. 1, sd 1956 ft. Del Rosa Oil Co.'s No. 1, sd 2460 ft. Hesperia Oil & Gas Co.'s 1A, sd 3275 ft. Mahala Oil & Gas Co.'s No. 2, swedging out 5080 ft. Rimer Oil Co.'s No. 1, co 709 ft. Rimer Oil Co.'s Armstrong 1, dr 130 ft. Western Pacific Oil Co.'s No. 3, will set 12½-inch at 100 ft.

Two Products that are Making Good

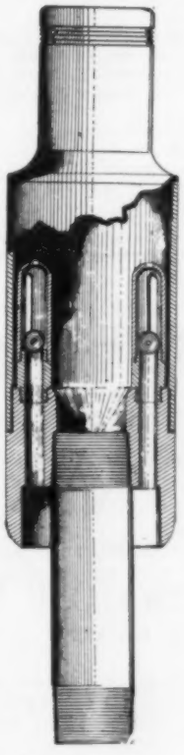


Fitz Flow Packers

ELIMINATES PACKER HAZARDS. Flows more oil with considerably less Rock Pressure. By allowing the gas to jet the oil in at the Perforation, taking high gas pressure off the Oil Sand. Equip well with barrel when packer is run—When pumping is necessary—Drop standing valve, agitate with rods and allow well to flow part of its production.

Now being successfully used by practically all of the Major Companies on hundreds of wells.

Fitz Oil Necks



Eliminates Gassed-Up standing valves as gas pockets are by-passed around working barrel. Allows the gas to help lift the oil. Traveling valve gets a full load at all times, thereby increasing production from 25 to 100 per cent. It is doing this for others and WILL DO IT FOR YOU. ASK YOUR NEIGHBOR.

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PERMITS GRANTED FOR NEW WELLS

Weekly Comparison of New Wells

Following is a condensed table giving a comparison of permits or locations made for new wells during the past year in Kansas, Oklahoma, Arkansas, Louisiana, Texas and California:

	Dec. 1925	Jan. 1926	Feb. 1926	Mar. 1926	Apr. 1926	May 1926	June 1926	July 2	July 9	JJuly 16	July 23
Arkansas	88	63	80	106	124	103	100	28	26	15	26
California	125	140	126	116	135	79	69	17	15	15	15
Louisiana	54	87	104	145	150	109	107	30	25	28	20
Kansas	124	165	144	160	170	156	161	40	..	32	37
Oklahoma	329	391	322	419	593	471	411	107	128	74	102
Texas	865	743	756	817	1070	941	1168	257	255	236	407
Mountain States	...	...	...	...	...	113	124	33	30	26	*
Total	1555	1589	1532	1763	2242	1972	2149	512	*479	426	607

*Does not include Kansas.

CALIFORNIA

Coyote Hills—The St. Helens Pet. Co. Ltd. Anderson 5, 18-3-9.

Kern County—John Lucas & Associates No. 1, 19-27-27. Union Oil Co. Sarret 1, 4-27-28.

Long Beach—Gem Oil Co. No. 3, 13-4-13.

Midway—Honolulu Cons. Oil Co. No. 75, 4-32-24.

Los Angeles County—Marine Corp. Western Corp. Strong 1, 24-3-12.

Montebello—Superior Oil Co. Masser 1, 2-2-12. St. Helens Riverside Properties Monterey 13, 2-2-12.

Richfield—Union Oil Co. J. W. Newell 6, 29-3-9.

Rosecrans—Union Oil Co. Howard Park 28, 18-3-13. Union Oil Co. Howard Park 29, 18-3-13.

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Santa Fe Springs—General Pet. Corp. No. 21, 5-3-11.

Torrance—C. C. M. Oil Co. Del Amo 57, 9-4-14.

Tulare County—Federal Exploration Co. Kinsella 1, 15-22-24.

Ventura—Associated Oil Co. Hartman 5, 22-3-23.

KANSAS

Barton County—Rankins et al No. 1 Sooy, center of the southeast of the southeast of 28-18-12w.

Butler County—Empire Gas & Fuel Co. No. No. 72, Koogler, center of the northeast of the southeast of the southwest of 17-26-5. Tidal Oil Company and Great Southern Oil Co. No. 35, Dickinson, northeast corner of the southeast of the southeast of the southeast of 16-26-8. Phillips Pet. Co. No. 2 Blankenship, northwest corner of the southeast of the northwest of 16-27-6; No. 2 Renolds, southeast corner of the southwest of the northwest of 16-27-6. Richmond Drilling Co. No. 1 Ross, northeast corner of the northwest of 17-26-6. Hoyt et al No. 2, Bollinger, owd, center of the south half of the southeast of the northeast of 19-27-6. Empire Gas & Fuel Company No. 12 Kirkpatrick, owd, center of the southwest of the southeast of 20-28-4. E. Wilcox et al No. 1 Holcomb, northeast corner of the southeast of the northwest of 21-29-4, correction.

Coffey County—Derby Oil Co. No. 1 Miller, northeast corner of the southeast of the southwest of 8-22-14, corrected location.

Cowley County—Twin State Oil Co. No. 1, Goodrick, southeast corner of the southwest of the southeast of 21-31-4e, corrected location. Arkansas Fuel Oil Co. No. 1 Brant, owd, southeast corner of the northeast of 12-32-4. Forrester et al No. 1, Reynolds, owd, northwest corner of the northeast of 4-33-7.

Elk County—Miller et al No. 1 Nelson, southwest corner of the northwest of 5-31-11.

Greenwood County—Day et al No. 4, Fuller, northeast corner of the southeast of the southwest of 1-22-10. Phillips Petroleum Co. No. 2 Green, southeast corner of the northeast of the northeast of 11-22-10. Skelly Oil Company No. 1 Prather, southwest corner of the northeast of 20-22-10. Empire Gas & Fuel No. 12 Fromme, northwest corner of the southwest of the northeast of 14-22-11. York State Oil Company No. 6 "C" DeMalorie, northeast corner of the southwest of the northwest of 32-22-11. Phillips Petroleum Company No. 3 Chandler, southeast corner of the northeast of 5-22-12. Skelly Oil Company No. 4 Green, southeast corner of the northeast of the northeast of 15-23-9; No. 5 Green, northwest corner of the southeast of the northeast of 15-23-9. Toxell et al No. 1 Edwards, southeast corner of the southwest of the northeast of 10-23-11. Mid Continent Pet. Corp. No. 10, Shadell, southeast corner of the northeast of the southeast of the southwest of 15-23-13. Roth Faurot and Manhattan Oil Co. No. 14 Cartwright, northeast corner of the northwest of the southeast of the northeast of 1-24-9. Katomie Oil Company No. 1 Redikin, southeast corner of 34-23-13. Parkins et al No. 1 Cox, southwest corner of the northwest of 14-25-11. Allison and Fitzwilliams No. 1 Cress, southwest corner of the northwest of the southwest of 36-26-10. Griffeth et al No. 1 Weaver, southeast corner of the northwest of 7-27-10. Marshall et al No. 1 Hansen, owd, northeast corner of the southwest of the northeast of 25-27-10.

Lyon County—Gaxhe et al No. 1 Welch, southeast corner of the southwest of 10-20-13. Landon and Phillips Pet. Co. No. 1 Hurd, northwest corner of the southwest of 30-21-12.

Marion County—Burford and Brimm No. 1 Folly, northwest corner of the northeast of 8-22-5e.

Morris County—Lambert O. & G. Co. No. 1 Blank, southwest corner of the southeast of 22-16-9.

Osage County—Callahan, Scott et al No. 1 Walker, northeast corner of the southwest of 23-17-15.

Russell County—Keys Pet. Co. No. 1 Sloan, southeast corner of the southwest of the southeast of 20-13-15w.

Woodson County—Stanley et al No. 1 Morrow, northeast corner of the northwest of the southeast of 34-26-14.

OKLAHOMA

Caddo County—Magnolia Pet. Co.'s No. 6, Kaw Kune, southeast corner of the northeast of 10-5n-9w. Briscoe and Hall No. 1, Lackey, northwest corner of the southwest of the northwest of 11-5n-9w.

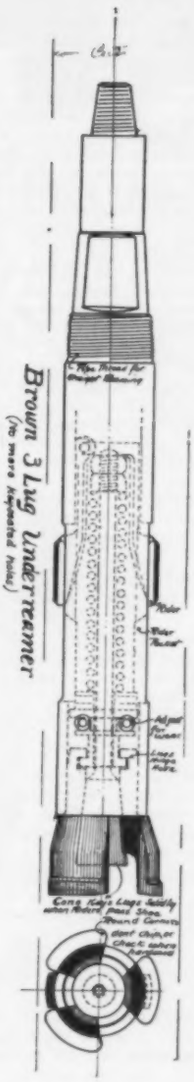
Carter County—Magnolia Pet. Co. No. 6, Bumpass, southeast corner of the northeast of the southeast of 33-1s-3w. Humble Oil & Ref. Co. No. 5, Luck, southwest corner of the southeast of the northeast of 33-1s-3w. Mid-Continent Pet. Corp. No. 1 Reynolds, northeast corner of the southwest of 3-2s-3w. Wirt Franklin No. 1 Smith, southeast corner of the northeast of 3-2s-3w. Magnolia No. 10 J. Lohman, northeast corner of the southwest of the southeast of 23-2s-3w. Magnolia No. 11 Lohman, northwest corner of the southeast of the southeast of 23-2s-3w. C. R. Smith No. 1-A Smith-Davis, northeast corner of the southeast of the southwest of 23-2s-3w. Hilltop Oil Co. No. 14 J. H. Bennett, center of the east line of the northeast of the northwest of 31-2s-2w. Amerada Pet. Corp. No. 9 Criner, southeast corner of the northeast of the northeast of the northwest of 20-5s-1e.

Comanche County—Harry Hanbury No. 1 A. F. Hope, center of the southwest of the southwest of 19-3n-9w. Couch, Cherry and Hambro Oil Company No. 1, northwest corner of the southwest of 19-2n-9w.

Creek County—Burlengane and Sharp No. 8 Peters, northeast corner of the southwest of the northwest of 13-19-8, (correction); No. 9 Peters, southeast corner of the southwest of the northwest of 13-19-8, twin; No. 10 Peters, center of the west line of the southwest of the north-

Brown Underreamers

Three Lugs—No More Key-Seated Holes



How to Run the Brown Underreamer:

Screw eyebolt in bottom of cone and pull cone down. The lugs fold in and the riders come down into their pockets. Put ring on riders.

Riders stay in the pockets while passing through the pipe. No spring tension on lugs, and cutting edges are turned inwardly so they can't catch in the joints.

When the riders clear the shoe the cone forces the lugs apart and the tool becomes a solid reamer, until the riders are pulled back into the pipe. Reamer can be pulled into the pipe and lowered as many times as you want, no "Setting" necessary in this reamer.

Assembly spool holds lugs and lugs do not slide up and down when underreaming.

In coming out the riders bump the shoe, the cone clears the bottom of mud and the lugs swing free before they strike the shoe.

Other Important New Features

The dressing form furnished with each reamer is, in reality, a die in which the lugs are dressed exactly to gauge and all three cutters of a set to exactly the same length.

In the 8¼" and larger sizes you don't have to pull your pipe to straight ream. The shoulder of the body is threaded and you fit up the underreamer just like a straight reamer, except that you follow with your pipe instead of rattling around in an open hole.

The bottom of the body is a plain cylinder, all the wear is upward and provisions are made to take up the wear as it occurs. They do not wear out of gauge. These bodies will outwear four bodies of any other type of underreamer.

Remember:—Holes key-seated as badly as is possible can be readily straightened in one tower with a Brown underreamer. We will stake the price of the reamer on this statement.

Lug cost less, and dressing time less per foot underreamed.

The "Old Timers" like our underreamer. One driller with 35 years under the beam, after examining the reamer and dressing form, remarked: "I see where you've cheated me out of a hell of a lot of hard work in dressin' lugs; and we can shor'en the devil run the pipe after underreamin'."

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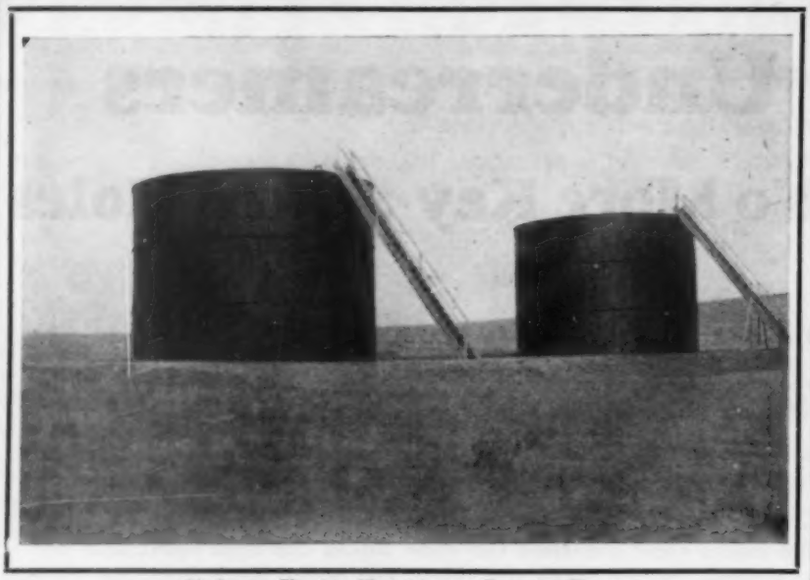
BRECKENRIDGE, TEXAS



Maloney Tanks, Hutchinson County, Texas

PANHANDLE COUNTRY

The above is a typical view of the great Panhandle district of Texas, suggesting the vast stretches of flat, sandy country. This view is on a lease of the Panhandle Refining Co., in Hutchinson County.

It pays to buy the best *always* but especially in new territory like this, where transportation is undeveloped and costly, and durability pays double. This is one reason why the tanks seen in the picture are MALONEYS, and why MALONEY has enjoyed a tremendous business from the Panhandle district. The durability of MALONEY material — Keystone Copper Steel — and the exceptional vapor-gas tightness insured by the MALONEY patented crimped seams and joints, especially appear to operators in this district.

MALONEYS are perfected in every detail. See our distributor, Panhandle Tank Co., Amarillo and Artesia.

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Distributors at All Principal Petroleum Points
Sizes 12 to 3,000 Bbls.
Packed in Steel-Bound Crates for Export

MADE OF KEYSTONE COPPER STEEL

MALONEY

west of 13-9-8, twin. Burnett et al No. 1 Jack, southeast corner of the northwest of 1-18-7, old well deepened. Magnolia Pet. Co. No. 1 A. Drumright, southwest corner of the southeast of the southeast of 32-18-7. J. W. Henry No. 4 Davy, northeast corner of the northwest of the southeast of 2-14-8. C. G. Tibbens No. 12, Johnson, center of the north line of the northwest of the southeast of 26-14-8. Holmes et al No. 4 Morgan, southeast corner of the southwest of the northeast of 3-19-9. Roxana Pet. Corp. No. 1 Clark, northeast corner of the southeast of the northwest of 18-19-9. Wilcox Oil & Gas Co. No. 1 Lindsey, northwest corner of the northeast of the northeast of 10-17-9. Texas Pacific Coal & Oil Co. No. 2 A. Harjoche, southwest corner of the northeast of the southwest of 22-17-9. Westland Oil Corp. No. 2 Walker, southwest corner of the northwest of 22-17-9. Chief Drilling Co. No. 1 Fulson, southeast corner of the southwest of the southeast of 16-17-10. C. G. Tibbens No. 1 Drake, southwest corner of the southeast of 32-15-9.

Garfield County—Sinclair O. & G. Co. No. 17 Kisner, northwest of the northeast of the southwest of the northeast of 19-22-3w.

Garvin County—Sinclair O. & G. Co. No. 1 McCurtain, southeast corner of the northwest of 23-4n-1e. Magnolia Pet. Co. No. 1 Vaughn, northwest corner of the southwest of the northwest of 12-3n-1e.

Grady County—Skelly Oil Co. No. 5 Edmundson, southeast corner of the northwest of the northwest of 23-5n-8w. Stogner et al No. 7 McCaughtry, center of the southwest of the northeast of 23-5n-8w. Marland Oil Co. No. 1 Burkes, northeast corner of the southeast of the northeast of 17-3n-5w. Carter Oil Co. No. 2 Polson, southeast corner of the southwest of 27-3n-5w; No. 3 Polson, southeast corner of the northwest of the southwest of 27-3n-5w. Briscoe and Hall No. 1 Nation, southeast corner of the northwest of the southeast of 34-3n-5w. Carter Oil Co. No. 1 Wham, old well deepened, northwest corner of the northeast of 34-3n-5w. Magnolia Pet. Co. No. 2 E. H. Mitchell, northwest corner of the northeast of the northwest of 34-3n-5w.

Hughes County—Dixie Oil Company No. 2-A Garner, no thwest corner of the northeast of 5-7-8.

Jefferson County—Gypsy Oil Co. No. 30 Seay, center of the west line of the southeast of the northwest of 33-6s-5w; No. 31 Seay, center of the south line of the southwest of the northeast of 33-6s-5w. J. R. McCoy et al No. 1 Irene Smith, southeast corner of the northwest of 14-7s-6w.

Kay County—Tidal Oil Co. No. 4 Boggs, southwest corner of the northwest of the southeast of 8-27-1w. Blackwell O. & G. Co. No. 2 Moore, southeast corner of the northeast of the southwest of 8-27-1w.

Lincoln County—Pure Oil Co. No. 1 Love, northeast corner of the southeast of 21-14-5. Texas company No. 1 Craig, southwest corner of the northwest of 22-14-5.

Logan County—Roxana Pet. Corp. No. 1, southwest corner of the northeast of the southeast of 30-19-4w.

Muskogee County—C. M. Bradley et al No. 1 J. Crittenden, center of the south line of the north half of the northwest of the southwest of 5-14-19.

Okfuskee County—Champlin Ref. Co. No. 1 Ingram, center of the east half of the southwest of the southwest of 14-11-11; No. 4 Jacobs, center of the north half of the southeast of the southeast of 15-11-11. Riverland Oil Co. No. 1 Barnett, owd, southeast corner of the southwest of the southwest of 19-11-11.

Okmulgee County—Denver Producing & Ref. Corp. No. 8 Thomas, southeast corner of the southwest of the northeast of 32-13-11. Texas Co. No. 14 S. Garnett, northeast corner of the northwest of the northeast of 21-15-14; No. 5 M. Bruner, center of the west line of the southwest of the southeast of 16-15-14. T. B. Slick No. 2 Colbert, southeast corner of the northwest of the southeast of 14-14-14. F. E. Perkins No. 19 S. Salder, southeast corner of the of the southwest of the northeast of 8-14-15.

Osage County—Phillips Pet. Co. No. 9, southwest of the northwest of the southwest of 1-northeast of the northeast of 20-14-14. J. L. Powell No. 2 L. Ande son, southeast corner

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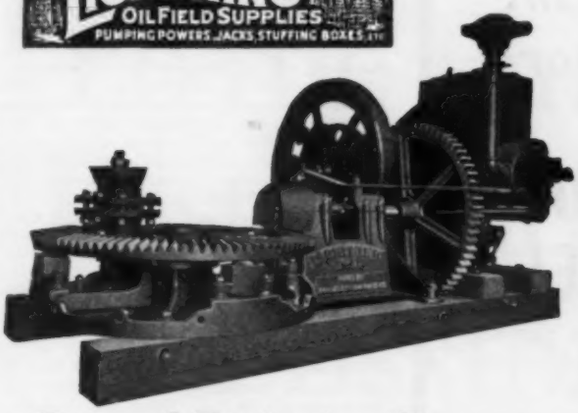
PUMPING POWERS, JACKS, STUFFING BOXES, ETC.



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Many leases will never justify the cost of installing and operating band wheel powers.
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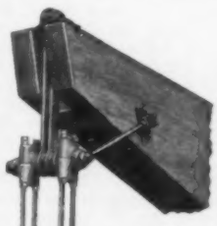
This power will handle wells as deep as 1600 feet with surprising economy. Another feature is that rod lines hug the ground closer than with any other geared power.
Band wheel powers are burdensome for some sizeable leases—especially where the drilling-up program is delayed; or where the lay of the land does not permit a centralized power unit.



Long Stroke Beam Hanger

Long Stroke Beam Hanger for pumping wells. Especially adapted for long stroke pumpers. The most complete hanger made and will last indefinitely. Full adjustment.

Sucker Rod Rotator

Designed for use with Lightning Hanger, but works with almost any make of hanger, constructed almost entirely of steel—rotates on heavy duty ball bearing. Friction disk eliminates danger of twisted rods. 100 teeth on ratchet so that a very small degree of turn may be made or as much as 1/16 of turn as desired. Perfect, simple and dependable. Weight, 180 pounds.

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Write for showing of full line.

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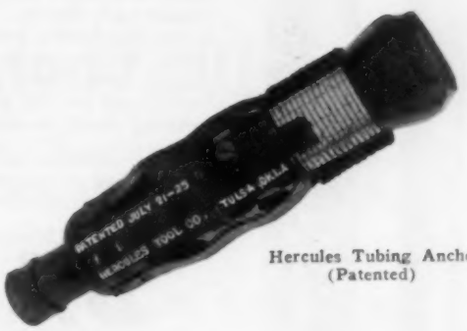
Hercules Tubing Hanger
(Patent Pending)

Hercules Tubing Spider
(Patented)



Hercules Tubing Anchor
(Patented)

TUBING SAFETY

Tubing Safety is guaranteed by use of Hercules Safety equipment.

The Hercules Tubing Anchor supports the tubing at the bottom of the well instead of the top and acts as a catcher in case an accident should occur. The Hercules Tubing Hanger is an adjustable packing tubing hanger made from forged steel. It supports weight of tubing at casing head and is absolutely gas tight. The Hercules Tubing Spider is the safest, the quickest and the easiest operating tubing spider in the field.

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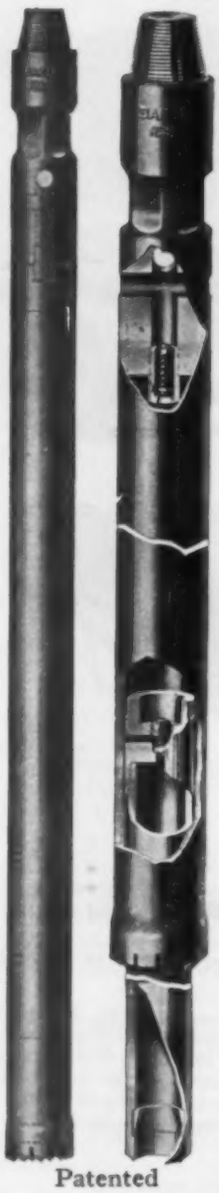
And Now, Superior Coring For Cable Tool Operators

with the

BAKER STANDARD CORE BARREL



Patented

This perfected core barrel is the first practical device which enables cable tool operators to take adequate cores.

The Baker Standard Core Barrel takes accurate, uncontaminated cores, approximately three inches in diameter, in any formation, and of sufficient length for correct analysis and correlation. It marks a definite, original, and new progress in regular cable tool drilling and is of special value in exploration work. It entirely supplants the wholly incomplete and unsatisfactory Punch Barrel and Biscuit Cutter attempts toward good coring and gives cores equal to, or better, than those of the best rotary core barrels. Has been thoroughly tested out in the field and results have been nothing short of sensational.

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27-5; Phillips No. 9, southwest of the northwest of the northeast of 12-27-5; Phillips No. 10, southeast of the northwest of the northeast of 12-27-5. Peters-Oliphant No. 1, southwest corner of the northeast of 20-27-6. Lewis Oil Co. No. 9, southeast of the southwest of the southeast of 21-26-6. A. G. Oliphant No. 3, northeast of the southwest of the southeast of 19-25-8. Marland Oil Co. No. 1, southwest corner of the southeast of 21-24-8. Continental Oil Co. No. 22, northwest corner of 33-24-8. Winona Oil Co. No. 4, center of the south line of the southwest of 27-24-10. Skelly-Moore No. 4, southwest corner of the southeast of 35-22-8. Atlantic Oil Producing Co. No. 1, southwest corner of the northeast of 8-22-9. Mid Co. Pet. Co. No. 16, center of the southeast of 18-22-10. Tidal Osage Oil Co. No. 19, southwest of the northeast of the southwest of 34-22-10. Oklahoma Natural Gas Co. No. 714, southwest corner of 17-21-11. Elliott and Smith No. 26, northeast corner of the southwest of the northwest of 30-21-12.

Pawnee County—Minnehoma Oil Co. No. 9 Mullendore, northwest of the northeast of the northwest of 24-21-7. Stacy and Vaughn No. 1 Baceck, northeast of the northwest of the southwest of 6-20-5. B. E. Kennedy No. 1 H. Black, northwest corner of the southwest of the northwest of 18-20-10.

Seminole County—Continental O. Co. No. 9 Pierce, twin, southeast of the southwest of the southeast of 33-11-8. Amerada Pet. Corp. No. 1 Baker, southwest corner of the southeast of the northwest of 28-10-6. Gypsy O. Co. and Phillips Pet. Co. No. 1 S. Tiger, southeast corner of 34-10-7. Indian Territory Illuminating O. Co. No. 6 James, southwest corner of the southeast of 24-9-6; No. 7 James, northwest corner of the southwest of the southeast of 24-9-6. Mid Continent Pet. Corp. No. 2 Pahardy, northwest corner of the southeast of the southwest of 24-9-6; No. 3 Pahardy, southwest corner of the southeast of the southwest of 24-9-6; No. 4 Pahardy, southeast corner of the southwest of 24-9-6. Tidal Oil Co. No. 4 Mayhue, southwest corner fo the northeast of the southwest of 24-9-6. T. B. Slick No. 2 Alexander northeast of the southwest of the southeast of 7-9-8. Gypsy Oil Co. and Phillips Pet. Co. No. 1 G. Island, southwest corner of the southeast of 21-9-7. Winona Oil Co. No. 2 Smith, northeast corner of the northwest of the northeast of 18-9-8. J. J. Wright et al No. 1 Hotulka, southeast corner of the northwest of the southeast of 22-7-6. Indian Territory Illuminating O. Co. No. 1 Marshall, northwest corner of the southwest of 32-7-7.

Stephens County—Gates Oil Co. No. 1 Charleston, southeast corner of the southwest of the southeast of 32-1n-5w. Pearce and Brown No. 5 Wilkinson, center of the east line of the northwest of the northwest of the southeast of 27-1s-8w. Walker Valley Oil Co. No. 3 Schick, northeast of the southwest of the southwest of the northeast of 27-1s-8w. McAllister et al No. 2-A Taliaferro, northeast of the northwest of the northwest of the southeast of 28-1s-8w. Crump and Beard No. 2 Brigham, northwest of the southwest of the southwest of the southwest of 30-1s-8w. Pace et al No. 1-A Gilworth, center of the south line of the southwest of the northwest of 2-2s-8w.

Tulsa County—Dillenback et al No. 1 Weaver, northwest corner of the southeast of the southeast of 29-19-10. Commercial Drilling Co. No. 5 Littleton, northwest corner of the southeast of 19-19-11. Posey Short No. 1-A Childers, northwest corner of the southwest of the northwest of the northeast of 4-19-12. McAllister and Milburn No. 1 Roy, southwest corner of the southeast of the northwest of 4-18-13. Edwards et al No. 1 Thatcher, southeast corner of the northeast of 18-18-14. Franchott and Mid Continent Pet. Corp. No. 1-A Fox, center of the east line of the southwest of the northeast of 22-17-13.

Wagoner County—Skeeter Oil Co. No. 6 A. Cully, southwest corner of the southeast of 16-17-16. M. E. Johnson No. 1 S. Bruner, southwest corner of 36-17-16. Mitchell Oil Co. No. 1 Barnett, southeast corner of 36-17-16.

ARKANSAS

Calhoun County—Delmar Oil Co. Gaibor 1, 16-11-14, NEc SW¼ SE¼.

Miller County—Gulf Ref. Co. Dorsey 1, 27-17-26, 310 ft E and 300 ft N of center of sec.

Ouachita County—Houston Oil Co. Hinton 2,

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County and District

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5-16-15, 200 ft S and W of NEc SE¼ NW¼. Imperial O. & G. Co. McClanahan 10, 6-16-15, SWc N½ NE¼ NE¼. Woodley Pet. Co. Richardson 5, 29-15-15, SEc SW¼ NE¼.

Union County—Atlantic Oil Prod. Co. Ford 2, 3-17-16, center of west line NW¼ NW¼. Eason et al Mooty 2, 22-17-16, NEc NW¼ NW¼. Foster & McWilliams Mooty 3, 15-17-16, 150 ft N and 330 ft W SEc SW¼ SW¼. Gladys Belle Oil Co. Cook A-5, 16-16-15, NEc SE¼ NE¼. Gulf Ref. Co. Parker 1, 21-17-16, 1120 ft N and 200 ft E of center of sec. Hatfield et al's Ennis 3, 23-17-16, SWc SE¼ NE¼. Humble O. & R. Co. Cruse 1, 21-17-16, 200 ft S and E of NWc SE¼ NE¼. Keene & Woolf's Murphy 5, 9-16-15, 150 ft S and E of NWc E½ SE¼ NW¼. Lion O. & R. Co. Mitchell A-4, 17-17-16, SEc NE¼ NE¼; Mitchell A-18, 17-17-16, 660 ft N and W of SEc SE¼ NE¼; Mitchell A-19, 17-17-16, center of NE¼ SE¼; H. Murphy 2, 9-16-15, NEc NE¼ NW¼. Magnolia Pet. Co. Warner 2, 1-16-17, NEc lot 2 in NW¼. Marine O. Co. Epps 1, 21-16-16, SEc NE¼ SW¼. Ohio Oil Co. Goodwin 8, 21-17-16, SWc SW¼ NW¼. Reynolds & Marr Goodwin 3, 21-17-16, SWc NE¼ NE¼. Southern Crude Oil Purch. Co. Slaughter 5, 3-17-16, 150 ft S and W of NEc W½ SW¼ SW¼. Standard Oil Co. Reynolds 4, 6-18-15, 10 ft S and 150 ft W of NEc S½ SE¼ NW¼. Sunny Jim Oil Co. Flenniken 3, 9-16-15, 200 ft S and W of NEc SW¼ SW¼. Wingfield et al Slaughter B-4, 3-17-16, center north line NW¼ SW¼.

LOUISIANA

Caddo Parish—Dixie Oil Co. Inc., Slattery Bldg., Shreveport, Slattery 10, 27-21n-15w, 197 ft S and 2278 ft E of NW cor of sec. Gulf Ref. Co. of La., Ardis Bldg., Shreveport, Ferry Lake 253, 22-20n-16w, 1450 ft E and 900 ft S of NW cor of sec; Levee Board U-7, 16-20n-16w, 2340 ft W and 1020 ft S of NE cor of sec.

Calcasieu Parish—H. C. Hanszen, care Union Sulphur Co., Sulphur, La., Harlan 1, 5-9s-6w, 100 ft S and 100 ft E of NW cor of sec.

Grant Parish—Humble O. & Ref. Co., Houston, Texas, Wm. Edenborn 1-A, 30-9n-2w, 150 ft N and 150 ft W of SE cor of sec.

La Salle Parish—L. H. Gray, El Dorado, Ark., Urania Lbr. Co. 1, 6-10n-2e, 64 ft N and 42 ft W of SE cor of sec. Hamilton & Ross, Tullos, La., Wright 2, 26-10n-1e, 280 ft S and 50 ft E of NW cor SE¼ of SE¼. Jena Oil Corp., Melba Hotel, Jena, La., White Sulphur Lbr. Co. 1, 23-8n-4e, 200 ft S and 660 ft E of NW cor NE¼ of SE¼. La. Oil Ref. Corp., P. O. Box 1117, Shreveport, La., Tremont Lbr. Co. C-1, 35-10n-1e, 150 ft S and 150 ft W of NE cor of SE¼. W. T. Murray, Tr., Rochelle, La., Bennett 6, 25-10n-1e, 150 ft S and 150 ft W of NE cor NE¼ of SW¼. Natural Gas & Fuel Corp., El Dorado, Ark., Urania Lbr. Co. H-3, 18-10n-2e, 350 ft S and 350 ft E of NW cor SW¼ of SW¼. Pima Oil Co., care Beckman & Freeman, Urania, La., Urania Lbr. Co. 3, 7-10n-2e, 150 ft N and 700 ft W of SE cor SW¼ of NE¼; Urania Lbr. Co. 4, 7-10n-2e, 200 ft N and 660 ft E of SW cor SE¼ of NE¼; Urania Lbr. Co. 5, 7-10n-2e, 200 ft S and 200 ft W of NE cor SE¼ of NE¼. Southern Crude Oil Purchasing Co., Slattery Bldg., Shreveport, La., Baldridge 2, 11-9n-1e, 200 ft N and 200 ft E of SW cor SE¼ of NW¼.

Richland Parish—Gulf Ref. Co. of La., Ardis Bldg., Shreveport, La., Chess & Wymond Co. et al 1, 23-18n-8e, 606 ft S and 444 ft E of NW cor of sec.

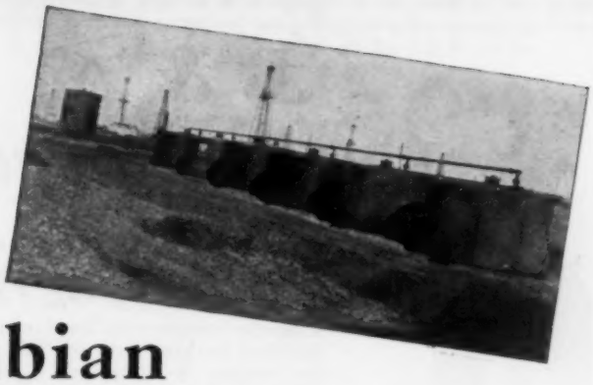
St. Mary Parish—Pure Oil & Humphreys Corp. Inc., Joint, Mexia, Texas, Avoca Island 1, 36-16s-12e, 400 ft S and 920 ft W of NE cor NE¼ of SE¼; Avoca Island 2, 6-17s-13e, 1720 ft E and 120 ft N of SW cor of NW¼.

Webster Parish—Belchic & Laskey, P. O. Box 1135, Shreveport, La., Pickett 1, 30-23n-9w, Center of SW¼ of SE¼.

Winn Parish—Keen & Woolf Oil Co., and Harry E. Oliver, Commercial Bank Bldg., Shreveport, La., Tisdale 2, 26-10n-1e, 150 ft S and 150 ft W of NE cor NW¼ of NW¼.

TEXAS

Archer County—Schermerhorn Oil Company, Cosden Bldg., Tulsa, Okla., R. H. Miller 1, A. Rohus sur, 155 ft to N and E lines. Humble Oil & Ref. Co., Houston, Staley-Wilson 1, B 119, Amer Trib sur, 450 ft to E and 150 ft to S line; H. O. Kunkel 1, G. W. Stell sur,



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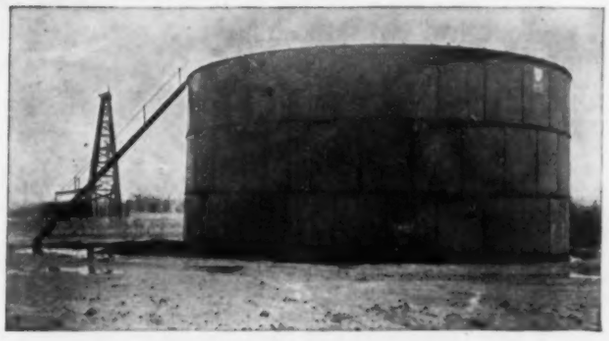

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1090 ft to N and 150 ft to W line. Caldwell & Consolidated Oil Co., Wichita Falls, Power Bank 6, B 135, Amer Trib sur, 300 ft S No. 4. Maer & Staniforth, Wichita Falls, J. T. Slaughter 1, B 50, G. P. Meade sur, 150 ft to S and E lines. Texas Co., Wichita Falls, W. R. Brown 1, B 106 Amer Trib sur, 600 ft to N and 1200 ft to W line. W. L. Barclay, Wichita Falls, J. Darilek 1, B 210 TE&L sur, 150 ft to N and W lines. Pandem Oil Co., Wichita Falls, W. H. Thomas 5, B 5, N. Thomas sur, 300 ft S No. 3; E. E. Threet 1, S. J. Williams sur, 162 ft to W and 150 ft to S line. Wooten & Reed, Graham, W. C. Owens 1, No. 26 J. Sanders sur, 450 ft to N and W lines. Mid-Kansas Oil & Gas Co., Tulsa, W. L. Andrews 2, S 137 R. Carson sur, 1720 ft to N and 200 ft to E line. Simms Oil Co., Magnolia Bldg., Dallas, Abercrombie-Taylor 1, B 81 Club Ranch sur, 150 ft to S and W lines. McCarty Oil Co., Bob Waggoner Bldg., Wichita Falls, L. E. Smith 2, Amer Trib sur, NW corner; G. Parrish 1, same sur, NE corner; 2, same sur, north central part of lease; L. F. Wilson 1, B 6, same sur. Gulf Production Co., Ft. Worth, W. M. Jackson 12, S 37, W. B. Aldridge sur, 150 ft to N and 614 ft to W line; A. P. Nichols 42, S 37, Amer Trib sur, 610 ft to W and 150 ft to S line. Wilson Drilling Co. & Ruff, Harvey-Snider Bldg., Wichita Falls, Kemp & Kempner 1, S 4, B 57, 150 ft to N and W lines. Allday Oil Corp., Wichita Falls, W. D. Pace 1, B 163, E. Carson sur, 450 ft to S and W lines. Cook & Reeder, Harvey-Snider Bldg., Wichita Falls, Browning 1, S 2, SP sur, 150 ft to N and W lines. Texhoma Oil & Ref. Co., Wichita Falls, C. L. Abercrombie 10, SP Ry sur, 1050 ft to N and 150 ft to E line. Shasta Oil Co., Wichita Falls, C. A. Mangold 17, B 21, Lazarus sur. Magnolia Petroleum Co., Dallas, I. C. Little 6, I. Holman sur, 300 ft S No. 4; L. L. Hudson 1, B 80, Harris sur, 1350 ft to E and 150 ft to N line.

Brown County—Blackstone Oil Co., Dundee Bldg., Ft. Worth, W. T. Jones 1, J. E. Stacey sur, 150 ft to S and W lines. R. S. Hays, Box 784, Brownwood, B. S. Boysen 1, ET, P&P sur, 150 ft to center of N line. A. J. Baker, Zephyr, H. Buynam 3, No. 136 J. Grant sur, west of No. 1. C. M. Root et al, Eastland, M. J. Suttles 13, No. 140 R. Mitchell sur, 750 ft to N and 1650 ft to W line. Wayne H. Hammon, Wichita Falls, B. S. Boysen 3, S 7 and 8, ET Ry sur, 150 ft to N and W lines; 2, same sur, 300 ft S No. 1; T. B. Starkey 11, ET Ry sur, 300 ft N No. 10; 12, same sur, 150 ft to center of S line; 10, same sur, 175 ft S and 300 ft W of No. 7. M. S. Inglewright, Ft. Worth, L. V. Edginton 1-A, Milliken sur, NE corner. R. G. Gillespie, Park Bldg., Pittsburgh, Pa., E. D. Henson 11, B 1, J. H. Prater sur, south of No. 1. Amerada Pet. Corp., Cisco, M. E. Fray 1, No. 621 J. Chandoin sur, 150 ft to S and E lines. Prairie Oil & Gas Co., Ranger, D. O. Woolridge 7, No. 157 ET Ry sur, 300 ft W No. 6. J. A. Murphy, Mineral Wells, J. B. Eubanks 1, No. 141 R. Mitchell sur, 150 ft to N and E lines. Barnsdall Oil Co., Tulsa, J. T. Sparks 1, B 69, B. Smith sur, 533 ft to N and 1783 ft to W line. Thurman & Maxwell, F. & M. Bank Bldg., Ft. Worth, D. H. Cameron 1, S 36, H&TC Ry sur, 600 ft to S and E lines. Hyde Production Co., Houston, (Brazoria County), H. Masterson 2, Varner & Tennell sur, 140 ft to N and 496 ft to E line. J. A. Bearman, Cisco, W. S. McClanahan 1, S 791, B 791, ET Ry sur, 450 ft to N and 150 ft to W line. J. E. McKanna, Box 798, Wichita Falls, J. I. Foster 3, B 783, T. Benson sur, 330 ft W No. 2. Midwest Exploration Co., Coleman, M. J. Suttles 10, No. 140 R. Mitchell sur, 1915 ft to N and 150 ft to W line. C. O. Moore et al, Cross Plains, T. A. Sears 1, HT&B Ry sur, 450 ft to S and 150 ft to W line. Humble Oil & Ref. Co., Cisco, J. C. Kilgore 75, B 6, J. Delgado sur, 306 ft S No. 5; M. E. Fry 1, J. Chandoin sur, 150 ft to S and W lines; 2, same sur, 380 ft E No. 1.

Baylor County—Hooser Oil Co., Thomas Bldg., Dallas, W. B. Miller 15, TE&L sur, 300 ft S No. 1.

Brazoria County—Hyde Production Co., Houston, H. Masterson 2, Varner & Tennell sur, 140 ft to N and 496 ft to E line.

Bexar County—Helvetia Oil Co., San Antonio, S. Smith 25, No. 226-272 sur, 200 ft to E and 850 ft to S line.

Burleson County—Marek Oil Co., Caldwell, A. Marek 2, B 11, 300 ft N No. 1.

Callahan County—Andrews Petroleum Corp., San Antonio, L. M. Dunaway 4, 3168 TE&L sur, 300 ft W No. 3. Ashley & Roach, Moran, T. E. Hayden 1, S 124, Univ. Lands sur, 150 ft to N and W lines. T. E. Davis et al, Vernon, A. J. Olson 8, S 3, GC&SF sur, 150 ft to W and 450 ft to S line; 9, same sur, 300 ft W of No. 4. Amerada Petroleum Corp., Cisco, M. Long 3, No. 777 W. G. Anderson sur, 150 ft to W and 240 ft to N line. Warren-Hayes Oil Corp. & States Oil Corp., Cisco, M. R. Surles 1, 3157 TE&L sur, 450 ft to E and 150 ft to S line. Bearman & Francis, Box 164, Cisco, J. A. Hayward 1, S 117, B 117, Univ. sur, 350 ft to N and 204 ft to W line. Dickey & Lay Oil Co., Cisco, W. E. Pruet 14, 2278 TE&L sur, 300 ft S No. 5. C. O. Moore et al, Cross Plains, J. W. McDaniel 17, CCSL sur, 300 ft W No. 16. Tolbitte & Francisco et al, Putnam, M. Hughes 1, S 6, D&D Asy sur. Forster, Townsend, Ungren & Frazier, Putnam, R. D. Williams 4, 2268 TE&L sur, 150 ft to N and E lines. Canyon Oil & Gas Co., Cross Plains, A. Derrington 6, W. G. Anderson sur, 246 ft N No. 4. Warren-Hayes Oil Corp., Cisco, J. Cottle 3, 2994 TE&L sur, 350 ft NW No. 2. Moutray Oil Co., Cisco, J. A. Flores 1, S 149, BBB&C sur, SE corner. W. R. Andrews et al, Cisco, R. D. Williams 58, 3973 TE&L sur, 500 ft to E and 150 ft to S line.

Coleman County—Amerada Petroleum Corp., Cisco, J. W. Harris 52, 138 J. Sander sur, No. 162, 300 ft S No. 17. Midwest Exploration Co., Coleman, J. C. Dibrell 6, No. 256 J. W. Hicks sur, 150 ft to W and 635 ft to S line. J. V. Flanagan, Tulsa, Okla., M. T. Overall 1, S 294, W. Woolsey sur, 2930 ft to W and 3240 ft to S line. H. H. Whitmire, Coleman, M. B. Smith 1, S 697 N. B. Waters sur, 1320 ft to N and 300 ft to W line. L. G. Bradstreet, Cross Plains, G. W. Teagle 1, HT&B Ry sur, 660 ft to E and 1980 ft to S line. Texas Pacific Coal & Oil Co., Ranger, B. A. Munger 1, S 629, J. W. Rhine sur, 600 ft to S and E lines.

Clay County—Western Oil Corp. of Texas, Brown Bldg., Wichita Falls, Magnolia Fee 1, B 25, PCSL sur, SE corner; 2, same sur, 150

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ft to E and 117 ft to S line; 3, same sur, 150 ft to W and 117 ft to N line; 4, same sur, 280 ft W No. 2; Wyatt 1, B 25, PCSL sur, 117 ft to N and 150 ft to W line; 2, same sur, 150 ft to W and 117 ft to S line.

Caldwell County—K. & S. Corp., Laredo, M. Moore 19, J. Henry sur, 400 ft NW No. 14.

Carson County—Empire Gas & Fuel Co., Staley Bldg., Wichita Falls, Burnett 1, S 177, B 5, I&GN sur, 330 ft to S and E lines. Gulf Production Co., Ft. Worth, S. B. Burnett 17, S 128, B 5, I&GN sur, 330 ft to S and W lines.

Concho County—Eugene Mays, Box 273, San Angelo, W. C. Hartgrove 1, S 312, A. Schmidz sur, 330 ft W No. 5. Exploration Co. of Texas, San Angelo, Hartgrove 1, S 240, J. Schenk sur, 660 ft to E and 1000 ft to N line.

Chambers County— Mills Bennett, Second National Bank Bldg., Houston, A. E. Barber 3, H. Griffith sur, 75 ft to NW and 525 ft to SW line; Fee 5, Wm. Bloodgood sur, 150 ft S No. 3. Barkley & Meadows, Humble, Barber 1, H. Griffith sur, 89 ft to W and 418 ft to S line.

Comanche County—Kirk & Brewer, Gorman, J. Manney 1, S 50, B 2, H&TC Ry sur, 200 ft to S and E lines; J. Guinn 1, GC&SF sur, 200 ft to S and E lines.

Crane and Upton Counties—Independent Oil & Gas Co., Ft. Worth, L. Taylor 7, S 6, H. T. Sapp sur, 660 ft E No. 2.

Crane County—Marland Oil Co., W. T. Waggoner Bldg., Ft. Worth, Hughes-Gibbs 1, S 9, B X, 330 ft to N and W lines; E. S. Hughes 2, S 92, B X, CCSD&RGNG sur, 330 ft to S and W lines.

Duval County—Humble Oil & Ref. Co., Houston, Beecher 1, B&SF No. 531 sur, 558 ft to N and 50 ft to E line. Simms Oil Co., Dallas, J. T. Dinn 2, S 62.

Eastland County—E. V. Parsons, W. T. Waggoner Bldg., Ft. Worth, E. Robinson 1, McLCSL No. 2 sur, 1320 ft to E and 440 ft to S line; J. S. Motes 1, T. A. Howells sur, 890 ft to N and 580 ft to E line. Gulf Production Co., Ft. Worth, J. D. Parsons 4, S 54, McLCSL No. 3 sur, 367 ft S No. 1; 5, same sur, 400 ft W No. 1. Ross & Frost, Cisco, O. A. Blakeman 1, S 37, B 2, ET Ry sur, 150 ft to N and W lines. B. H. Lightfoot, F. & M. Bank Bldg., Ft. Worth, H. C. Earnest 1, S 3, B 4, H&TC Ry sur, 450 ft to S and W lines. G. L. Lyda, Putnam, D. W. Bint 1, D. W. Bint sur, 160 ft to N and E lines.

Ector County—Leigh Taliaferro, Texas Hotel, Ft. Worth, J. S. Smith 1, S 28, Amer Trib sur, 330 ft to S and W lines; W. B. Henderson 1, S 3, B 43, Twp No. 38, 1320 ft to S and E lines.

Fort Bend County— Gulf Production Co., Houston, West-Schenck 6, T. Hobermacher sur, 426 ft to W and 100 ft to S line; T. W. Davis 31, M. Young sur, 300 ft SW No. 19; Davis 13, G. Waters sur, 400 ft NE No. 11.

Gray County—McMan Oil & Gas Co., Tulsa, H. H. Merten 1, S 87, B 3, I&GN sur, 330 ft to S and E lines; P. Worley 1, same sur, 330 ft to S and W lines. Magnolia Petroleum Co., Dallas, W. W. Merten 10, S 82, B 3, I&GN sur, north central part of lease; 11, same sur, 660 ft W No. 10. Pure Oil Co., Mexia, J. T. Benton 3, S 63, B 3, I&GN sur, 660 ft N No. 2. Empire Gas & Fuel Co., Staley Bldg., Wichita Falls, Hughey 1, S 128, B 3, I&GN sur, 330 ft to S and E lines; Worley 1, S 63, B 3, same sur, 330 ft to S and W lines; Wall 1, S 61, B 3, same sur, 330 ft to S and W lines; Benton 1, S 64, B 3, same sur, 330 ft to S and W lines. Gulf Production Co., Ft. Worth, P. A. Worley 1, S 83, B 3, I&GN sur, 330 ft to N and W lines; 2, same sur, 330 ft to N and E lines; 3, same sur, 330 ft to S and W lines; H. H. Merten 1, S 88, B 3, I&GN sur, 330 ft to S and W lines; A. Holmes 1, S 87, B 3, I&GN sur, 330 ft to N and E lines; R. S. McConnell 1, S 175, B 3, I&GN sur, 330 ft to N and 1320 ft to W line.

Guadalupe County—K. & S. Corp., Laredo, A. J. McKean 27, H. Cottle sur, 400 ft NE No. 26.

Gonzales County—L. L. Jones, Waelder, E. B. Lampkin 1, T. Moore sur, 450 ft to N and W lines.

Hutchinson County—Travelers Oil Co., Box 304, Amarillo, W. L. Kingsland 3, S 6, B Y, M&C sur, 290 ft to N and 330 ft to W line.

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J. K. Hughes Dev. Co., Mexia, W. L. Kingsland 8-A, F&C sur, west central part of lease; W. L. Kingsland 3-B, F&C sur, 660 ft S No. 2; 4-B, 660 ft S No. 3; 5-B, 660 ft S No. 4; 6-B, 330 ft to S and E lines. M. F. Matheson, Box 17, Amarillo, E. B. Jones 1, S 9, B M15, WW&S sur, 330 ft to S and E lines. Hagy Co., Amarillo Hotel, Amarillo, E. B. Johnson 1, S 66, B 46, H&TC sur, 291 ft to E and 330 ft to S line. McMan Oil & Gas Co., Tulsa, M. Gray 2, S 21, B Y, M&C sur, 330 ft to N and W lines; 3, 330 ft to S and W lines; 4, 330 ft to S and E lines; S. B. Archer 3, S 65, B 46, H&TC sur, 200 ft to N and 330 ft to W lines. Holmes & Riley, Amarillo Hotel, Amarillo, H. E. Smith 2, S 11, B Y, M&C sur, east central part of lease. Goldelline Oil Corp., Oklahoma City, Okla., J. A. Whittenburg H-1, S 15, B X02, 330 ft to S and E lines; J. J. Perkins C-1, S 24, B 47, H&TC sur, 330 ft to N and E lines. Barnsdall Oil Co., Tulsa, J. A. Whittenburg 1, S 81, B 46, H&TC sur, 330 ft to S and W lines; J. F. Whatley 1, S 24, B Y, A&B sur, 330 ft to N and E lines. Empire Gas & Fuel Co., Staley Bldg., Wichita Falls, E. B. Johnson 1-A, S 68, B 46, H&TC sur, 330 ft to S and E lines; J. F. Weatherly 2, S 19, B Y, M&C sur, 330 ft to S and E lines; 3, 300 ft to N and W lines; 4, 990 ft to N and W lines; 6, 330 ft to N and 990 ft to W line. Prairie Oil & Gas Co., Ranger, Johnson 3, S 69, B Y, M&C sur, 330 ft to N and W lines; 4, 330 ft to S and W lines; Johnson 10, S 20, B Y, M&C sur, 330 ft to N and W lines. Empire Gas & Fuel Co., Staley Bldg., Wichita Falls, J. F. Weatherly 5, S 19, B Y, M&C sur, 330 ft to E and 990 ft to S line; 7, 280 ft to S and W lines. Gulf Production Co., Ft. Worth, C. L. Dial 26, B X02, Lasater No. 16 sur, 330 ft to N and 428 ft to W line. Pure Oil Co., Mexia, H. B. Johnson 1, S 70, B 44, H&TC sur, 330 ft to S and W lines. Phillips Petroleum Corp., Bartlesville, Okla., W. L. Kingsland 3, S 6B, B 4, D&SE sur, 330 ft to S and 1012 ft to W line; J. Kingsland 3, S 4, B Y, M&C sur, 330 ft to N and W lines; G. Savoy 1, S 161, B 1, GH&H sur, 1320 ft to S and E lines; J. J. Perkins 2, S 2, B 1, H&GN sur, 322 ft to E and 989 ft to S line; G. E. Martin 1, S 1, B X02, H&OB sur, 330 ft to S and E lines; 2, 326 ft to E and 990 ft to S line; 3, 323 ft to E and 990 ft to N line; 4, 330 ft to N and 320 ft to E line; V. George 2, S 26, B 47, H&TC sur, 473 ft to E and 330 ft to N line; 1, 330 ft to N and W lines; Whittenburg 4, S 12, B Y, M&C sur, 330 ft to N and E lines; J. J. Perkins 1, S 16, B X02, H&OB sur, 424 ft to W and 330 ft to S line.

Harris County—Atlantic Oil Prod. Co., Magnolia Bldg., Dallas, Kochler 1, J. B. Stevenson sur, 450 ft to N and 700 feet to W line. M. J. Bashara, Wichita Falls, E. L. Bender 1, W. H. Jones sur, 50 ft to S and W lines. Gulf Production Co., Houston, E. P. Taylor 19, J. Hamilton sur No. 52, south of No. 11.

Hardin County—Paraffine Oil Co., Saratoga, Fee 50, F. H. Green sur, 252 ft to E and 50 ft to S line. Lake View Oil Co., Sour Lake, Hardin Co. Oil Co. 49, S. Jackson sur, 225 ft to S No. 25. S. R. Buchanan, Batson, Gilholme 89, B 3, J. Milholme sur, SE corner of Blk. 3. Rio Bravo Oil Co., S. P. Bldg., Houston, Fee B-112, BBB&C sur, 200 ft S No. B28. Gulf Production Co., Houston, Choate 62, C. Choate sur, 250 ft SE No. 60.

Howard County—Marland Oil Co., W. T. Waggoner Bldg., Ft. Worth, O. Chalk 2, S 113, B 29, W&NW sur, 330 ft to S and E lines. Magnolia Petroleum Co., Dallas, M. Chalk 1, S 124, B 29, W&NW sur, 330 ft to N and E lines.

Hartley County—Holmes & Heck, Box 571, Amarillo, Cotts 1, S 58, B XR, W. M. D. Lee sur, center.

Hunt County—Richardson Bros. Inc., W. T. Waggoner Bldg., Ft. Worth, V. A. King 1, S 116, ET Ry sur, center.

Jack County—J. R. Cole, Jr., Colet Bldg., Tulsa, Okla., G. P. Stewart 2, 2783 TE&L sur, 1150 ft to N and 200 ft to W line. Wilson Drilling Co., Harvey-Snider Bldg., Wichita Falls, M. D. Snedeker 3-A, B 8, Batex sur, 300 ft S of No. 2. Hester, Hawkins & Staley, Staley Bldg., Wichita Falls, M. D. Snedeker 1, B 7, Robbins sur, 150 ft to N and E lines. Guthrie, Cole & Ferguson, Box 744, Wichita Falls, M. D. Snedeker 5, B 7, Batex sur, 350 ft W No. 4.

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246, Laredo, W. P. Allen 1, S 23, B 3, H&GN sur, 1270 ft to N and 1470 ft to E line. K. & S. Corp., Laredo, H. Holbein 4-TP, S 14, B 17, Animas sur, 150 ft to S and E lines. Magnolia Petroleum Co., Dallas, J. Garza 8, No. 291 Hendricks sur, 300 ft NE of No. 7. Simms Oil Co., Dallas, C. Palacios 10, No. 291 B. C. Hendricks sur, 301 ft N No. 8; J. Weil 3, No. 81 B. C. Hendricks sur, 300 ft N No. 1.

Jefferson County—Yount-Lee Oil Co., Beaumont, Trembley 1, J. A. Veatch sur, 120 ft to W and 270 ft to S line; Fee 1, B 5, J. Douthitt sur, 50 ft to N and 660 ft to W line; Gladys 6, J. A. Veatch sur, 250 ft to W and 95 ft to S line; McFaddin, Weiss & Kyle 7, P. Humphries sur, 50 ft to N and 1440 ft to E line. Sun Oil Co., Beaumont, M. McLean 2, J. Douthitt sur, 50 ft to N and E lines; 3, 150 ft SW No. 1. Rio Bravo Oil Co., S. P. Bldg., Houston, T&NO 2, J. Douthitt sur, 50 ft to S and E lines; 3, 138 ft N No. 1; 5, 125 ft N No. 3. Gulf Production Co., Houston, E. Thomas 9, W. H. Smith sur, 500 ft E No. 8. J. O. Banks, Beaumont, Stephens 1, B 6, J. Douthitt sur, 28 ft to N and 45 ft to W line.

Limestone County—J. K. Hughes Dev. Co., Mexia, L. S. Suttle 1, Reed, Owen & Varela sur, 150 ft to S and E lines. Transcontinental Oil Co., Tulsa, Okla., K. O'Dell 1, P. Varela sur, 150 ft to N and W lines; 2, 150 ft to N and E lines; A. E. Rosson 2-A, B 2, P. Varela sur, 150 ft to N and E lines; 3, 150 ft to S and W lines; 2, B 3, Varela sur, 150 ft to N and E lines; Cogdell 1, P. Varela sur, 150 ft to S and W lines. Pure Oil Co., Mexia, S. M. O'Dell 2, P. Varela sur, 338 ft NE No. 1; 3, 338 ft NE No. 2; 4, 150 ft to S and E lines; Atkins 1, P. Varela sur, 150 ft to S and E lines; 2, 330 ft SW No. 1; R. Hobbs 1-S, A. Varela sur, 440 ft to N and 150 ft to E line; S. M. O'Dell 1, A. Varela sur, 150 ft to S and W lines. Godley Oil & Gas Co., Henrietta, A. R. Suttle 1, Cogdell sur, 150 ft to E and 172 ft to S line; Rosson 1, B 14, A. E. Rosson sur, 150 ft to S and E lines. Atlantic Oil Prod. Co., Magnolia Bldg., Dallas, A. E. Rosson 1, P. Varela sur, 150 ft to E and 170 ft to S line. J. K. Hughes Dev. Co., Mexia, L. S. Suttle 1, Reed & Owens sur, 150 ft to N and E lines.

Liberty County—Hull Oil Co., Box 1788, Houston, A. Abel 11, J. Devore sur, 450 ft to center of W line; 12, 75 ft E No. 3. Gulf Production Co., Houston, W. L. Thomas 10, J. Devore sur, NW corner. Empire Gas & Fuel Co., Staley Bldg., Wichita Falls, Barngrover 21, J. Devore sur, 280 ft to E and 335 ft to S line. Old Colony Oil Co., Box 267, Dayton, W. Liberty Oil Co. 13, S 119, H&TC Ry sur, 1050 ft to S and 100 ft to E line.

Live Oak County—Mid-Kansas Oil & Gas Co., Tulsa, Okla., J. H. Drummond 1, J. Conway sur, 200 ft to N and 5333 ft to E line.

Montague County—F. H. E. Oil Co., Nocona, N. J., Howard 1 B, J. Chambliss sur, 300 ft to E and 150 ft to S line. McMan Oil & Gas Co., Tulsa, Okla., N. J. Howard 1, J. Chambliss sur, 450 ft to N and 206 ft to E line. Lesh, Kilcrease & Co., Nocona, R. Hynds 6, J. J. Wall sur, 266 ft S No. 1. Pure Oil Co., Mexia, J. E. Crow 1, J. Chambliss sur, 200 ft to S and W lines; L. Keck 1, Wm. Donoho sur, 250 ft to S and E lines; J. W. Rowland 4, J. Chambliss sur, 338 ft W of No. 2. Texhoma Oil & Ref. Co., Wichita Falls, N. J. Howard 7, J. Chambliss sur, 150 ft to W and 1847 ft to S line; 6, 150 ft to W and 2147 ft to S line; N. J. Howard 10, J. Chambliss sur, 192 ft to W and 1939 ft to S line; J. W. Rowland 3, J. Chambliss sur, 921 ft to N and 150 ft to S line.

Mitchell County—Atlantic Oil Prod. Co., Magnolia Bldg., Dallas, R. P. Ricker 6, B 28, S 11, T&P sur, 330 ft to S and E lines; 7, 330 ft to E and 1197 ft to S line.

Milam County—Rockdale Junior Oil Co., Rockdale, J. D. Hamilton 5, R. Milby sur, 300 ft W No. 4; 6, 450 ft W No. 2. Bois D'Arc Hedge Oil Co., Rockdale, J. P. Bartlett 1, T. S. Arnett sur, 155 ft to S and E lines. Texas Co., Wichita Falls, M. E. Stewart 2, J. Liendo sur, 1000 ft to NW and 150 ft to NE line.

Medina County—Winona Oil Co., Beaumont, J. W. Long 1, No. 422 G. Hodge sur, 600 ft to E and 2990 ft to S line. Medina Oil Co., Hondo, R. Taylor 7, B 135, A. Bruchet sur, 300 ft NE No. 1.

McCulloch County—H. R. Emerson, Brady Bldg., San Antonio, J. J. Kirkpatrick 1, J. Henderson sur, 660 ft to center of S line.

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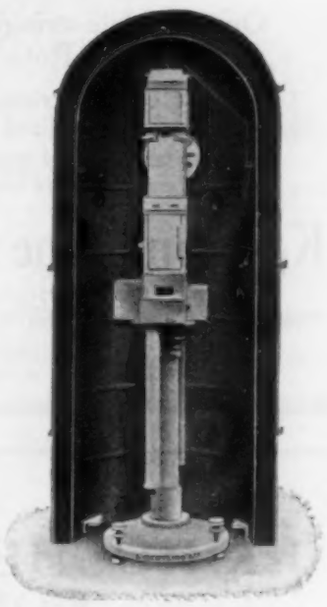

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Matagorda County—Gulf Production Co., Houston, A. L. Craig 5, T. Williams sur, 100 ft NE No. 3. McCarty Oil Co., Bob Waggoner Bldg., Wichita Falls, Braman 1, I. Ingram sur, 150 ft to N and E lines.

Orange County—Gulf Production Co. Houston, Joe Hager 24, S. M. Luce sur, 138 ft W No. 23. Humble Oil & Ref. Co., Houston, Chesson 27, Wm. Dyson sur, 81 ft to N and 559 ft to W line.

Palo Pinto County—V. Helm, Fort Worth, W. M. Gilbert 1, S 37, B A, T&P sur 150 ft to E and 400 ft S line. Prigman & Francisco, Gilbert 1, S 59, B 1, T&P sur, 270 ft to N and 420 ft to W line. F. E. McConnell, Wichita Falls, A. B. Wilbar 1, J. Latham sur, 250 ft to N and 1600 ft to W line. Texas Pacific Coal & Oil Co., Ranger, Fee 26, Wm. Dyches sur, 673 ft to N and 400 ft to W line.

Panola County — Magnolia Petroleum Co., Dallas, R. Johnson 2 J. Johnson sur, 300 ft to S and W lines.

Reagan County — Big Lake Oil Co., Best, University 91, S 25, B 9, 800 ft N No. 47; 92 same sur, 920 ft E No. 47; 93, same sur, 400 ft S No. 55; 94, same sur, 520 ft S No. 47; 95, sec 12, B 9, 520 ft E No. 59 96, same sur, 800 ft W No. 47; 97 same sur, 520 ft S No. 48; 98, same sur, 954 ft NE No. 60; 99, sec 1, B 9, 400 ft S No. 47; 100 sec 2, B 9, 800 ft E No. 10; 101, same sur, 520 ft S No. 10; 102, sec 1, B 9, 368 ft SW No. 21; 103, same sur, 954 ft SW No. 51, 104, same sur, 1544 ft SE No. 14, 105 same sur, 368 ft SW No. 24.

Refugio County — Bartlett-Brooks Production Co., Corpus Christi, C. Heard 2, B 3, Refugio sur, 300 ft to E and 2045 ft to N line.

Shackelford County—A. W. Walker, Dallas, T. W. Alexander 3, S 15, D&D sur, 300 ft E No. 1. Roeser & Pendleton, Inc., Fort Worth Club Bldg., Fort Worth, W. I. Cook B14, S 85, E. T. Ry sur, 235 ft to E and 685 ft to N line; B7, same sur, 235 ft to E and 150 ft to S line; B13, same sur, 235 ft to E and 150 ft to N line; B15, same sur, SE cor. Texhoma Oil & Ref. Co., Wichita Falls, M. L. Childress 2, 399 TE&L sur, 750 ft to NW and 150 ft to NE line. Dr. C. W. Wallace, Wichita Falls, G. E. Waters 52, B 61, Univ. Lands sur, 150 ft to E and 450 ft to S line; J. B. Matthews 1, S 4, E. T. Ry sur, 150 ft S and E lines. Victor Ziegler, Stamford, W. D. Martin 1, S 16, B 3, H&TC Ry sur, center. Hughes & Simon, W. T. Waggoner Bldg., Fort Worth, D. Diller 1, S 4, Ahrenbeck sur, 150 ft to S and W lines. H. Y. Oil Co., Box 642, Fort Worth, W. C. Owens 29, S 20, Bayland Asy. sur, 150 ft N No. 28. Milham Corp., of Texas, Travis Bldg., San Antonio, Z. W. Casey 10, 581 TE&L sur, 300 ft SW No. 3; 9, same sur, 300 ft NE No. 3; 8, same sur, 300 ft SW No. 2; 7, same sur, 300 ft NE No. 2; R. C. Simpson 2, S 14, Blind Asy. sur, 2000 ft W No. 1. Gibson & Johnson, Alexander Bldg., Abilene, W. P. Newell 1, S 6, GH&H sur, 265 ft to N and 212 ft to E line. Humble Oil & Ref. Co., Cisco, Q. I. Cook 8, S 84, E. T. Ry sur, 300 ft W No. 7; 9, same sur, 300 ft W No. 8; 10, same sur, 358 ft S No. 7; 11, same sur, 358 ft N No. 5. Shertzer Bros., Cisco, Cook 11, S 18, Univ. Lands. P. S. Kendrick, Obany, J. O. Gordon 1, S 67, L. A. L. sur, 150 ft to E and 450 ft to S line. Leslie Spoonts, Box 531, Moran, Boyles 1, S 14, L. A. L. sur, 150 ft to N and E lines. Luther McRea, Cisco, Diller 1, S 42, L.A.L. sur, 1160 ft to E and 160 ft to N line. Southern Pet. Exploration Co., Alexander Bldg., Abilene, Dyer 1, S 84, B 12, T&P sur, center. Williams & Forster, Albany, W. L. Hatcher 1, S 17, L.A.L. sur, 150 ft to N and E lines. Gulf Prod. Co., Fort Worth, J. S. Willis 1, 1561 TE&L sur, 450 ft to N and 435 ft to W line. Moutray Oil Co. & Reiter-Foster, Cisco, T. L. Terry 4, S 47, L.A.L. sur, 300 ft N of No. 3. W. B. Keene, Cotton Exchange Bldg., Fort Worth, W. L. English 5, S 18, Univ. Lands sur, 300 ft W No. 1. Texhoma Oil & Ref. Co., Wichita Falls, M. L. Childress 1, 399 TE&L sur, 150 ft to N and E lines. Ladaro Prod. Co., Box 17, Amarillo, E. H. Davis 1, 538 TE&L sur, 160 ft to N and 150 ft to E line.

Stephens County—Sun Oil Co., Dallas, W. E.

Carey 6, S 52, B 5, T&P sur, 520 ft SW No. 5. Gulf Prod. Co., Fort Worth, Wm. Speer 2, S 80, B 6, T&P sur, 1628 ft E No. 1. Texas Pacific Coal & Oil Co., Ranger, W. J. Gardenhire 2, S 43, B 6, T&P sur, 200 ft to S and 500 ft E line.

Sabine County — Sebastian & Smith, Center, Lewis-Werner-Stave Co. 1, H. Nichols sur, 150 to center of W line.

Starr County—Ramsey-Maxey Oil Co., First Nat. Bank Bldg., San Antonio, A. M. Kelsey 1, B 8, Porcion No. 76 sur, SW cor of NE¼ of SW¼.

Throckmorton County—M. H. Overlees, Box 567, Albany, J. A. Matthews 1, S 39, Comanche Res., 600 ft to N and E lines. H. B. McGuire, Graham, D. McKeichan 1, Comanche Res., 400 ft to E and 200 ft to S line. Red Bank Oil Co., Castle Bldg., Tulsa, Okla., V. Parrott 5, B 971, Premium sur, 466 ft to N and E lines.

Upton County—Skelly Oil Co., Tulsa, Okla., O. P. Jones 1, S 32, B 41, Twp. 4S, 1320 ft to N and E lines. Sun Oil Co., Dallas, Burleson & Johns 3, T. C. Jones sur, 330 ft to N and E lines; 4, same sur, 649 ft W No. 5; 5; same sur, 649 ft W No. 6, 6, same sur, 649 ft W No. 2. Marland Oil Co., W. T. Waggoner Bldg., Fort Worth, A. S. Burleson 9, S 100, T. C. Jones sur, 420 ft to SW and 160 ft to S line; 12, same sur, 330 ft to S and E lines; 13, same sur, 1147 ft to S and 330 ft to E line; 14, same sur, 1807 ft to S and 330 ft to E line; 15, same sur, 2936 ft to E and 330 ft to S line; 16, same sur, 2287 ft to E and 330 ft to S line; 17, same sur, 1638 ft to E and 330 ft to S line; 18, same sur, 990 ft to S and E lines. 19, same sur, 1640 ft to E and 2196 ft to S line; A. S. Burleson 2A, S 4, GC&SF sur, 1650 ft to NW and 330 ft to NE line; Sanger 9, S 1, B R, J. H. King sur, 1650 ft to S and E lines; T. E. Shirley 1, S 10, B 3½, CCSD&RGNG sur, 330 ft to S & W lines. Texas Pacific Coal & Oil Co., Ranger, E. Shirk 1, S 5, B 3, MK&T sur, NW cor. Magnolia Pet. Co., Dallas, G. O. Chalk 3, S 114, B 29, W&NW sur, 300 ft to S & W lines. Roxana Pet. Corp., South Bend, B. H. Estep 1, S 18, B 3, MK&T sur, 330 ft to S and W lines; D. Benken 1, S 6, GC&SF sur, 1148 ft to N and 330 ft to W line. Texas Co., Wichita Falls, R. King 3, S 11, B 3½, CCSD& RGNG sur, 911 ft to W and 330 ft to S line; 4, same sur, 1571 ft to W and 330 ft to S line.

Wichita County—Hammon, Heyser & Garrett, Wichita Falls, S. H. McCarty 7, S. O. Fowler sur, 300 ft NE No. 5. Magnolia Pet. Co., Dallas, B. F. Cook 12, B 28, R.R.V.L. sur, 700 ft E No. 5; C. Tuttle 1, M. Templeton sur, 150 ft to N and W lines. R. N. Hamilton, Wichita Falls, J. A. L. Hum 1, S 4, BBB&C sur, 480 ft to E and 150 ft to S line. Proctor Oil Co., Staley Bldg., Wichita Falls, L. W. Proctor 1, B 35, R.R.V.L. sur, 150 ft to S and E lines. H. B. Hines A2, S 11, H&GN sur. Bonchil Co., Staley Bldg., Wichita Falls, H. Beach 34, C. T. Ry sur No. 4, 100 ft E No. 31; 35, same sur, 65 ft E No. 23. Jno. O'Neil, Wichita Falls, J. W. Harrison 2, AB&M sur, 300 ft W No. 1. J. W. Hooser, Thomas Bldg., Dallas, Wines 4, S 11, H&GN sur, 300 ft N No. 3. Ascot Co., Wichita Falls, S. B. Burnett 6, S 7, HT&B sur, 550 ft to W and 112 ft to N line. Electra-Gulf Oil Co., Electra, Wm. Murray 2B, H. B. Balch sur, 85 ft N No. 2. Kemp, Munger, Allen Oil Co., Wichita Falls, H. M. Munger 26, S 10, B 30, W.V.F.L. sur, 150 ft E of No. 19. Simms Oil Co., Dallas, B. F. Dutton 3, B 12, DCSL sur, 164 ft to NW and 464 ft to W line. Texhoma Oil & Ref. Co., Wichita Falls, J. A. Fisher 1, S 15, B 3, H&GN sur, 2490 ft to E and 150 ft to N line; S. B. Burnett 7M, S 3, SA&MG sur, 499 ft to N and 830 ft to E line. Rio Bravo Oil Co., S. P. Bldg., Houston, Fee 2B, S 31, B 5, H&TC sur, 50 ft SW No. E12A. Gulf Prod. Co., Fort Worth, Potter-Lewis 10, B 23, W.V.F.L. sur, 500 ft No. 7. Pet. Prod. Co., Wichita Falls, Kemp & Allen 4, S 28, R.R. V. L. sur, 634 ft E and 360 ft S of NW cor. Burk Burnett, Jr., Oil Co., Box 106, Fort Worth, Burnett-Lloyd 2, S 34, W. W. Carroll sur.

Wilbarger County—Milham Corp. of Texas, Travis Bldg., San Antonio, W. T. Waggoner 4H, S 42, B 4, H&TC sur, 300 ft NE No. 3; 8H, same sur, 334 ft SW No. 7; 14H, same sur, 306 ft NE No. 4; 13 H, same sur, 348 ft NE No. 14; 160, 4A, S 48, B 4, 150 ft to N and E lines; 3H, S 42, B 4, 150 ft to N and E lines; M1, S 58, B 1, 150 ft to N and E lines; O1, S 15, B 6, 150 ft to N and E lines; 15L, S 42, B 4, 300 ft NE No. 9; 3L, same sur, 300 ft W No. 1; 9L, same sur, 150 ft to S and W lines; 4L, same sur, 300 ft W No. 3. Roxana Pet. Corp., South Bend, F. A. Condon, 1, S 22, B 15, H&TC sur, 150 ft to N and 1825 ft to E line; J. Condon 1, S 22, B 15, H&TC sur, 150 ft to N and E lines. Humble Oil & Ref. Co., Wichita Falls, W. T. Waggoner 5, S 46, B 4, H&TC sur, 300 ft N No. 4; 9, S 46, same sur, 50 ft NE No. 5; 10, same sur, 300 ft SW No. 9. Phillips Pet. Corp., Bartlesville, Okla., Waggoner 1, S 44, B 4, H&TC sur, 200 ft to N and E lines; 2, S 47, B 2, same sur, 211 ft to E and 197 ft to S line; 7, S 47, B 4, 334 ft W No. 2; 7, S 44, B 4, 334 ft S No. 5; 8, S 46, B 4, 150 ft to N and E lines; 9, same sur, 311 ft N No. 3. Barkley & Meadows, Wichita Falls, W. H. Stephens 14, S 83, B 14, H&TC sur, 83 ft E No. 3. E. C. LeBus, Electra, W. T. Waggoner 1, S 4, B 13, H&TC sur, 450 ft to S and E lines.

Webb County—Magnolia Pet. Co., Dallas, C. Webster 1, B 684, BS&F sur, 150 ft to S and E lines; Page-Garcia 1, S 611, C&M sur, 150 ft to center of SE line. Kirkpatrick & Lucas, Laredo, Anderson-Thaxton 1, S 2363, B 3, 600 ft to N and E lines. Sun Oil Co., Dallas, A. M. Bruni 5, Albercas sur; A. M. Bruni 4, B13, Arriba sur, 450 ft to W and 150 ft to S line; 5, same sur, 150 ft to W and 450 ft to N line.

Wheeler County—Mid-West Exploration Co., Amarillo Bldg., Amarillo, W. C. Company 1, S 12, B 27, H&GN sur, 330 ft to N and W lines.

Wharton County—Texas Co., Wichita Falls, S. T. Taylor 10A, S. F. Austin sur, 900 ft SE No. 9.

Winkler County — Leigh Taliaferro, Texas Hotel, Fort Worth, J. S. Smith 1, S 28, B A, 1320 ft to S and W lines.

Young County—Cosden & Consolidated Oil Co., Wichita Falls, A. C. Casey 1, 1494 TE&L sur, 150 ft to N and E lines. Robert Oil Corp., Breckenridge, E. Rogers 9, 166 TE&L sur, 350 ft W No. 7. Commodore Oil Co., Box 501, Austin, R. Watson 1, B 22, Y.C.S.L. sur, SE corner. Sun Oil Co., Dallas, O. Deitrich 10, S 4, BBB&C sur, 600 ft E No. 8. Leigh Taliaferro, Ponca City, Okla., B. F. Manley 1, 2727 TE&L sur, 850 ft to N and E lines. Simms Oil Co., Dallas, W. W. Gregg 1, B 17, Y.C.S.L. sur, 401 ft to S and 1488 ft to E line. Pandem Oil Co., Wichita Falls, T. L. Whitehead 4, 166 TE&L sur, 300 ft W No. 3; 5, same sur, 150 ft to N and W lines. Texas Co., Wichita Falls, R. V. Tidwell 12, S. G. Hardaway sur, 300 ft S No. 10; 13, same sur, 300 ft N No. 10. Halmack Oil Co., American Nat. Bank Bldg., Dallas, M. Logan 1, J. Poitevent sur, NW corner. Hamilton & Martin, Wichita Falls, J. L. Whitehead 4, B 166, TE&L sur, 303 ft E No. 3. J. R. Cole, Jr., Cole Bldg., Tulsa, Okla., G. P. Stewart 1, 2797 TE&L sur, 175 ft to S and E lines. Ell Evans, Box 446, Cisco, C. Logan 2, S 24, Y. C.S.L. sur, 600 ft S No. 1. Stafford & Haynes, Graham, Z. Daily 5, S. Tynes sur, W central. Four Oil Co., First Nat. Bank Bldg., Wichita Falls, W. B. Bryan 4, 1367 TE&L sur, 650 ft to E and 150 ft to S line. Roy I. Carter, Wichita Falls, R. H. Rachuig 1, S 4, BBB&C sur, 150 ft to N and W lines; S. M. J. Benson 2, 1450 TE&L sur, 300 ft W No. 1. Stafford & Hayes, Graham, Z. Daily 4, S. Tynes sur, S of No. 3. W. L. Barclay, 110 Indiania Ave., Wichita Falls, W. Bailey 1, 165 TE&L sur, NW corner. Atlantic Oil Prod. Co., Magnolia Bldg., Dallas, R. H. Rachuig 7B, S 4, BBB&C sur, 300 ft W No. 4; 6B, same sur, 300 ft S No. 6. C. P. Davis, Tulsa, Okla., J. A. Holt 1, S 2, BBB&C Ry sur, 150 ft to S and E lines. Camp Oil & Gas Co., Wichita Falls, J. M. Hall 1, S 1, BS&F sur, 150 ft to N and E lines.

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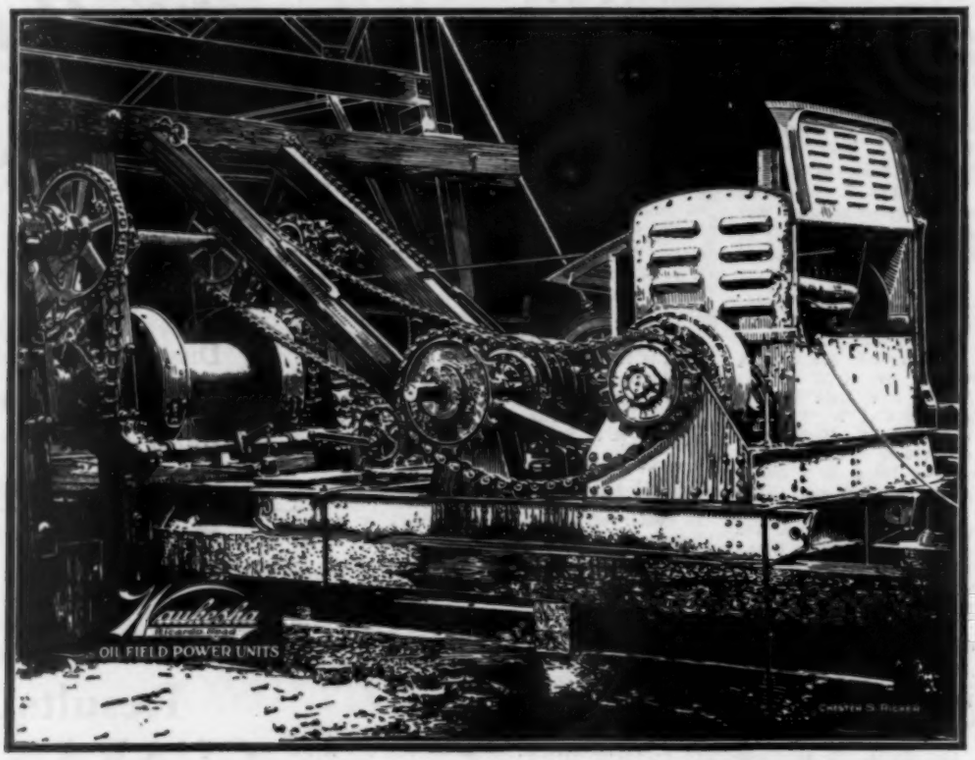

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What "yellow" is to taxicabs—and what "gold" is to money—"red-orange" is to Waukesha Oil Field Power Units. It symbolizes the highest standard. All through the oil fields, this already famous Waukesha color has become a symbol of reliable service, portability, and proven economical power.

If you have not received the new Waukesha "Oil Field Bulletin," which describes these units thoroughly, write now and a copy will be mailed you gladly on receipt of your request.

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NEW EQUIPMENT, CATALOGS, BULLETINS, BOOKS

Slush Pump Designed for Extra Heavy Duty

The new 6¼x14-inch Ideal Power Driven Slush Pump recently announced by The National Supply Companies has been designed and built for heavy duty rotary drilling service in fields where it is necessary or advisable to use internal combustion engines or electric motors for power in place of the usual steam equipment.

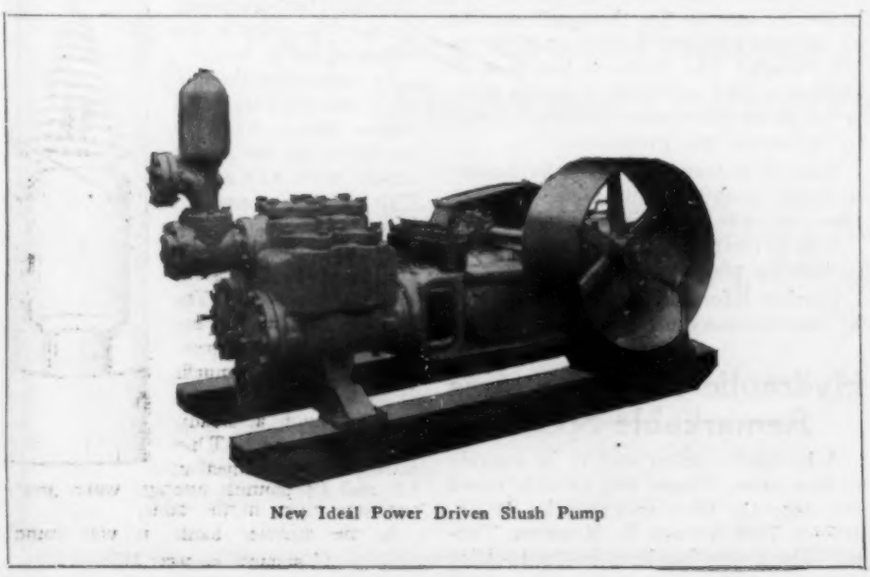
The 6¼x14-inch fluid cylinder which has contributed so much to the success of the corresponding steam driven Ideal Slush Pump is used interchangeably on this pump. A 6½, 6, 5¾, 5½ or 5-inch diameter liner can be substituted for the standard 6¼-inch diameter where less volume at higher pressure is required. The standard 7¼x14-inch Ideal Fluid Cylinder can also be fitted for low pressure service.

Metal piston and valve packings are available for this pump, as for the standard steam pumps. With this equipment it is admirably adapted to handling oil in pick-up or pipe line service. For rotary fields this advantage of interchanging the drilling and pick-up pumps is obvious.

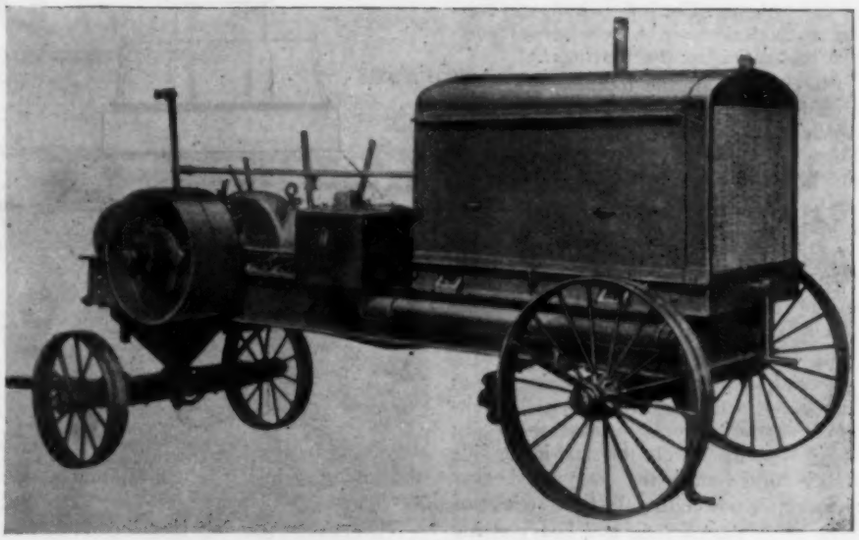
The standard pump is arranged for belt drive. A 48-inch diameter by 14-inch face pulley is furnished as standard equipment. It can also be furnished for direct motor drive. This arrangement is more compact but somewhat less flexible than the belted installation. Finished pads and tapped holes are provided on the top of the pump frame to take a motor sub-base which can be drilled as specified for any one of a number of types of motors. The belt pulley on the pump intermediate shaft is replaced by a gear which is meshed with a pinion on the motor shaft. This gives a direct double geared connection between motor and pump.

Cut herringbone gears are used on this pump. The pinion is of forged steel, and gear of cast steel both carefully heat-treated, cut and ground. This type of gear combines great strength with practically noiseless operation.

One of the outstanding features of the Ideal Power Driven Slush Pump is the thoroughness of its lubrication. A two gallon capacity, fourteen feed Class "B" McCord lubricator is frunished as standard equipment, driven by an eccentric on the intermediate shaft. It furnishes positive-pressure measured lubrication to every moving joint (except the gears which run in an oil bath) and also to the fluid piston rod glands. This is recommended as the most reliable and positive means of lubrication on account of the construction and the relatively slow speed of this type of machine.



New Ideal Power Driven Slush Pump



W. T. Young Drilling Engine.

The frame is enclosed by means of the auxiliary stuffing box, side plates and crank guards. The gears also are totally enclosed and run in a bath of oil. This enclosure of the working parts serves three useful purposes; slush and water is excluded from the principal bearing surfaces. efficient lubrication is permitted; and more important the safety feature which lies in the covering of gears and cranks.

Literature on the 6¼x14-inch Ideal Power Driven Slush Pump may be obtained from any National Supply Companies Store or by writing to the General Offices at Toledo, Ohio.

Mounted Drilling Engine For Wildcatting

A mounted drilling engine especially well adapted for wildcat or exploration work is announced by the W. T. Young Engine Company, Oil City, Pa.

This engine consists of a heavy duty multiple cylinder, four cycle motor, transmission, clutch, shaft, pulley and blower for forge, assembled on a channel beam frame which is carried by an all iron truck.

For emergencies and unusual jobs the engine is equipped with a low speed gear. Fuel and water consumption is said to be remarkably low in this engine.

The engine itself is either a four or six cylinder heavy duty four cycle locomotive type motor, with force feed oil to all bearings, Bosch high tension magneto with impulse coupling, governor to limit high speed only. It is equipped with electric starting motor, generator and storage battery.

The hood which is made of galvanized iron and painted, fully covers the motor and when the sides of the hood are in place, they can be securely locked, preventing any tampering with the motor or accessories. Locks, all using the same key, are furnished with the outfit.

Gears are of alloy steel, oil tempered,

running continuously in oil. They are of babbitt in cast iron shells, easily renewed if necessary. Belt pulley hub contains the floating Bronze bushing four and three-fourths inches in diameter by 13 inches long. The hub is hollow, forming an oil reservoir, which insures positive lubrication to the bearings.

Clutches are of the multiple disc type, each having four asbestos friction discs which have proven very satisfactory. These clutches are easily adjusted by simply turning one self-locking nut.

The pulley is of extra heavy split steel with solid web.

The blower for furnishing blast to the forge is of large capacity and is mounted on the rear right hand side of the engine frame and is driven from the engine shaft by a friction wheel.

Special advantages of the engine are as follows: it sets lengthwise with the belthouse, requiring only a narrow grade; the belt-pulley is on the left-hand side and is over-hung; the low speed gear gives ample power to pull three strings of tools or to start a long and heavy string of casing, tubing or packer; the engine is four-cycle, four or six cylinder, as desired, and has great flexibility; its fuel consumption is economical; no foundation is required, and the motor is enclosed in a hood.

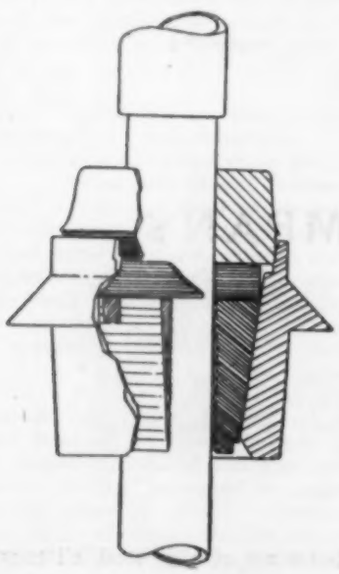
Other details will be supplied by the company on request.

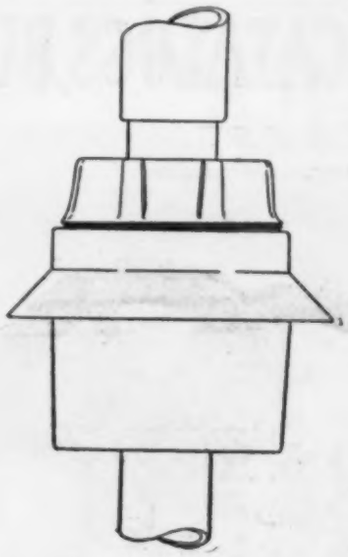
Tubing Hanger May Be Used in Any Size Casing

The Hercules tubing hanger, manufactured and sold by the Hercules Tool Company, Tulsa, can be used on flowing or pumping wells, in any size or make of casing head.

This hanger is made of steel forging and weighs about 48 pounds. The bowl is flanged to fit in the top of the casing head, thus carrying the tubing weight at the casing head on the slips.

The three slips fit the circumference of

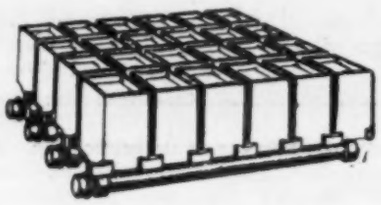




the tubing, gripping it and holding it securely.

The rubber packing ring forced down tightly on the slips by the packing nut, acts as a packing to pack off around the tubing under any pressure.

More detailed information may be secured by writing the company.



Gas Burner Made in Units Is Easy to Install

A gas burner for use in the fields is being marketed under the name of the Perfecto, by the P. J. Sonner Gas Burner Company, Winfield, Kansas. This burner is manufactured in units and is claimed to have a number of points of superiority.

It is said that the success of the burner is due to the thorough mixing of the air and gas before combustion takes place. The Perfecto has demonstrated in field tests that it makes plenty of steam for rotary drilling on five to 10 pounds gas pressure.

Since it is made in units, the burner is easily installed and is also easy to repair in case of accident.

The Perfecto is adapted to all types of heating apparatus.

Further information will be provided by the company on request.

Hydraulic Motor Attains Remarkable Speed

A hydraulic motor said to be capable of developing almost unbelievable speed has recently been patented by W. P. Denny, 7106 Avenue E, Houston, Texas. The motor has been tested by Rice Institute, Houston, and received a favorable report.

The motor is fastened to the lower end of the drill stem and a specially constructed bit is fastened to the driver shaft of the motor. Water pressure is furnished by a pump.

A water line through the motor and bit provides water that cools the bit and removes cuttings.

The inventor claims that many thousand revolutions per minute can be obtained, enabling the bit to cut a very thin slice of earth or rock which will be so fine that it will mix with the water, making sufficient mud to wall the sides of the hole.

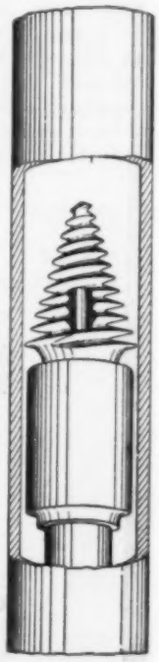
A core taking device is a part of the bit and cores can be taken by means of compressed air at any desired depth.

The report made by the Rice Institute is given below:

This motor was fitted for use on 1-inch pipe. It contained 16 nozzles directing the water onto a rotor with radial blades and ball bearings. The shaft was equipped with a cast iron disc 2-15/16 inches diameter by about 1 inch thick which served as a brake wheel.

The motor was first connected to the water mains at Rice Institute, which supplied water at a pressure varying between 54 to 55 pounds per square inch. Its speed was tested with a Schaeffer and Budenburg centrifugal hand tachometer, recently calibrated. When running light, the motor exceeded 3000 revolutions per minute, the maximum speed for which the tachometer is suited.

Loads were applied by a simple rope brake and pressures were taken with accurate gauges. The speed was found to vary about 200 revolutions per minute above and 200 revolutions per minute below an average speed, this average decreasing as the brake load increased. The horsepower devolped is given in the following table.

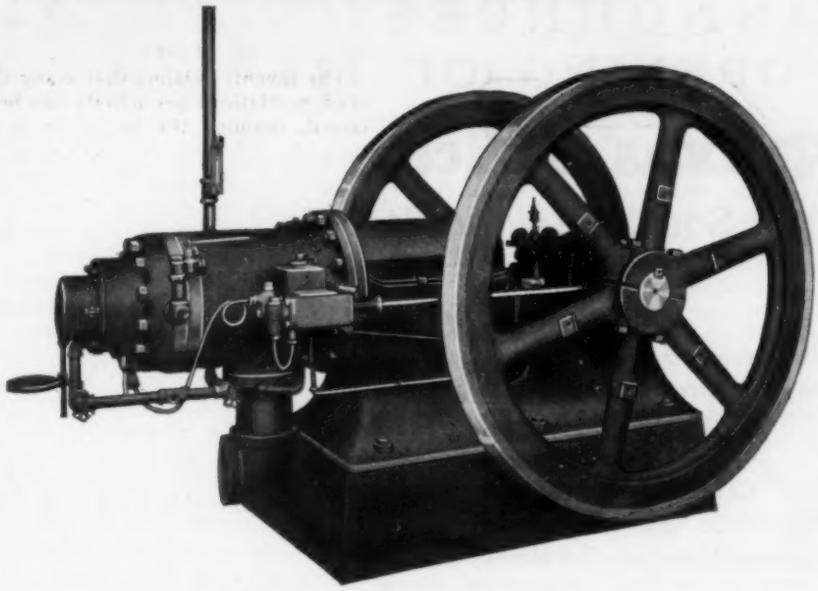


By connecting the motor to the discharge of a duplex pump, higher pressures in the water supply were secured. This pressure was of necessity pulsating, varying about ten pounds above and ten pounds below the average. The speed of the motor under this varying pressure did not vary much, if any, more than when supplied with a steady water pressure. The horsepower developed at 120 and 150 pounds average water pressure are given in the table.

At the heavier loads, it was found

(Continued on page 242.)

"KRUEGER" *A Better Oil Engine For YOU!*



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KRUEGER Oil Engines are manufactured in four sizes . . . . 15, 20, 25, and 35 Horse Power. They are unusually economical to operate and are guaranteed as to quality of material in them and their development of specified horsepower.

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Write for full details and complete catalog on the "better" Krueger Oil Engine.

Fluid Packed Pumps **Positively No Cups or Packing**
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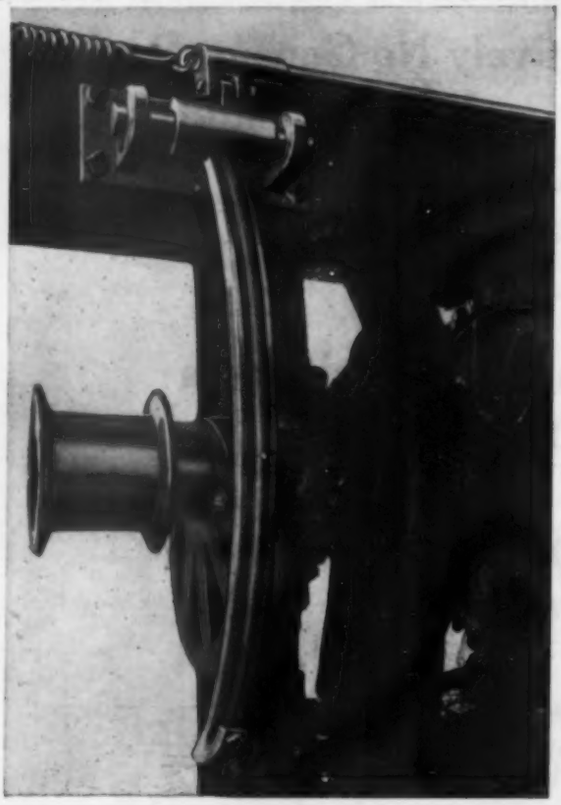

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Safety Automatic Cat Head

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The MacClatchie Automatic Cathead pays for itself in the saving of time and rope in the first 3,000 ft. of hole.

A trial will convince you.

Safety and saving of time and rope are the outstanding features of this innovation.

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REPRESENTED IN THE MID-CONTINENT BY ELMS SPECIALTY CO.,
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LETTERS OF Paul Peebles P.S.G.

mi deer cleopatry

well cleo hunny I told yu I wood rite 2 yu sum moar about pollyticks after the primerry & I am as good as mi werd, only it aint mutch 2 say escept that sum of the candydates seams 2 hav kinder bin off on their estimates of produckshun. It seems like mabe dan was the only feller whitch had ennything like the rite dope in advanct, & considerin the fireworks whitch he used in making his test of the terrytory, his sucksess is a pretty good reckermend for the seesmoregraft metherd in Texas. Yu sea dan got to lookin around up about austin a few months ago & says 2 hisself that it looks like mabe he seesmoregraft than it was enny senct in, so he got bizzy with the fireworks & sea where he got 2.

well when I am ritin 2 yu I aint saw the final returns & aint bin around 2 ast linch about it, but from hear it seems like mabe it will not be no seckern primerry on account of dan gittin all of the votes he needs in the first 1, & under them circustantses well I do not sea how I am goin 2 make mi rase for the legilashure in the 2nd primerry if it aint goin 2 be none, & besides I sea where a hole lot of fellers runnin for legislashure in this county didn't git verry menny votes ennyway, whitch makes it kinder look like mabe all the legislashure votes is kinder tide up.

& ennyway I gess that pollyticks aint for me because jim says it is sumthin crooked & linch says it is booze & boodle, & on account of me always bein strate & not noin nuthin about booze & boodle, well I gess I had better leev pollyticks alone.

well hunny I gess yu sea where mi feeld has cum in up at Nigger Creek just like I told yu it wood way back yonder when meehayer was first spoutin.

Yu remember I told yu hunny that all they had 2 do was 2 move back from the falt a little & drill it. I noed all the time that it was not no reesen that all the oil in the woodbine sand had 2 be at mexia & corsicana & powell & them feelds.

I always sed that if it is oil in 1 plase it is a pretty good sine it is in anuther like even forinstants when I was out 2 lost anglus about 4 yeres ago & told the geeologists that it was indicashuns of oil at spindletop, well they laffed at me because they sed it was 20-yeres old stuff, but yu sea now that I noed mi onions because it is anuther feeld at Spindletop whitch it did not none of them no nuthin about when they was laffin at me.

so that is the reesin hunny that I did not make no big public announctment about nigger creek, because I did not want noboddy laffin at me about it along about the time when I was tryin 2 git the job of bein the permenent seckretary of the geeoligy asosashun, & besides it is a hole lot of them fellers whitch is jeelus of me ennyway so I had 2 go slow on mi perdickshuns along about that time.

so I just kept the matter under advisement as the feller says, only I did tell bill rather about it about 3 yeres ago that time I was goin 2 tulsey & the widder where I bordes made me take her in her car up 2 dallis & I lost the car on the way up to tulsy & cum back bi arkansaw & found out about mi old man havin a oil feeld on the farm, whitch I gess yu remember all about that & I am only tellin yu so as yu will sea it is reesenabul what I am tellin yu about what I say I told bill rather & when I told him & all of that.

well I told bill rather that it was a sure shot that it was a feeld out about nigger creek & that it aint no tellin but what it is a string of feelds along the mexia struckter on both sides just the saim like it is on both ends. so yu no how bill is. well he cood not keep it 2 hisself like I told him until I was reddy for him & me 2 spring it, but he goes out & lines up heeth robinson & leon pepperburg on the geeology & the transcontinental on the land & they have hogged all the ackrage & also all the credick for finding the feeld even if I was the 1 that had the first ideer.

hunny I gess I am not commershall enuff for this bizness. I am so addickted 2 mi scients that the other feller gets all the munny out of it, only I gess mabe them fellers will eatch 1 mabe send me 10$ apeece now that they hav made a stake out of it.

but I will tell yu now how I deduckted that it ort 2 be sum oil up hill from the falt. well it is generously reckernized that oil migrates down 2 the falts & quits migratin on account of it gits up agenst a ded wall whitch it can not git threw.

it is a kind providents of nashure that if it had not of made sum falts in the erth, or in other werds if the erth was perfeck, well oil wood just keep migratin like the wanderin jew & ware itself out so that it wood not be no oil. but on account of the falts well it has 2 settle down sumtimes so it gits behine a falt or a salt dume & stays there unlessen sumthin happens 2 make it move, like I am goin 2 tell yu about now.

well when the oil goes migratin down 2 a falt of corse it wood all like to git hung up against the saim 1, but if 2 mutch oil cums well of corse it has 2 go sumwheres elst, whitch is the reesen sum littler falts is spred around handy. now what happened at mexia mabe was that all the oil gotten hung up bi the big falt & then it cum a wet seesen & the oil was floted back up the hill & fell in behine the littler falts, whitch is mabe the reesen for nigger creek bein where it is & I aint sayin yet what the possibilities of still moar like that around up there are.

but like it is now I am bettin hunny that mabe it aint as mutch oil in there as sum of the land owners is hopin it is, whitch is a pretty safe bet that ennyboddy cood make on any situashun.

yu sea hunny I was the first 1 to advanct the theery that oil cood just as well migrate up a falt as not if it wants 2, & part of my theery is that only a little oil will ever do that way, on account of the tendency 2 always go down hill & also sum of it mabe gits tired of the jerney & rests off for a few hundred milyun yeres or how ever long it takes for it 2 travel. so that is that.

well hunny I gess the leckshun was a good enuff excuse this time for why I did not cum 2 sea yu. I had 2 stay up all nite 2 sea if I win a dollar bet I had on the eleckshun, whitch I noed I had lost it early in the evenin, only I wanted 2 make sure, so I stayed on. it has lerned me a lesson hunny & that is 2 not take 2 mutch of what a polytishan says about how menny votes he is goin 2 git. sum way they just do not seam 2 no what they are talkin about.

now last friday nite linch was so sure that he was goin 2 git eleckted that if bill farish had agreed with him he wood hav ordered the fires put out at baytown sos that the plant wood cool off sos that they cood start tarin it down & also the saim thing with all the big plants in Texas. linsh was so shure that he was goin 2 be eleckted & that all the oil co's whitch was not owned in Texas wood just hav 2 git up & git. but I gess he noes now that he is about 30 yeres behine the times & that the peeple of Texas likes 2 hav oil co's here whitch can pay off there men reglar when payday comes.

well I no it will be a disapointment 2 yu 2 no that I hav desided not 2 run for the legislashure, but mi skeam for gittin 2 run for nuthin seams 2 hav blowed up & did not none of the boys think 2 rite mi name on the ticket in the first primery ennyway as a mark of encouradgment, so I gess I will just as well forget it

yore lovvin paul.

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All Pioneer Oil Well Shooters

SQUEAKS FROM THE BULL WHEEL

A Sad Story

"One day," said the old countryman from the hills, who was on trial for murder, "when my rheumatism was pestering me, and my daughter had just eloped with a good for nothin' scallawag, and my barn had burned down and I lost both my mules, and my best old sow got the cholera and died, and I just heard they had foreclosed the mortgage and the sheriff was lookin' for me, I told my troubles to one of these here optimists and he said: 'Cheer up, old top, the worst is yet to come!' So I shot him."

He: "Would you marry a man who lied to you?"

She (sarcastically): "You don't think I want to be an old maid, do you?"

Elsie—Oh, Bobby, look at this picture, a vineyard with a lot of people treading in grapes. I wonder why they do that?

Bobby—I asked pa and he said it was to put a kick in the wine.—Boston Transcript.

Dentist—Will you take gas?

Pugilist—Will it hurt much if I don't?

Dentist—I'm afraid it will.

Pugilist—Then for your sake I think I ought to.—Passing Show.

It's a wonderful thing for the women
The popular permanent wave,
Now it's up to some struggling inventor
To get out a permanent shave.

Bulletin from Mosquito Belt

A visitor in the South complained bitterly concerning the plague of mosquitoes. An aged negro who listened respectfully explained a method by which the pests might be endured. But this was in the days before prohibition.

"My old Marse George, suh, he done managed them animiles sholy splendiferous. Always when he come home nights, he so completely intoxicated he don't care a cuss foh all the skeeters in the hull creation. In the mawin, when Marse George done git up, the skeeters so completely intoxicated they don't care a cuss foh' Marse George ner nobody."—Pure Oil News.

Quick: "The average woman's clothes weigh about eight ounces."

Quack: "Isn't it a shame that they have to wear such heavy shoes?"

Officer: "Not a man in this division will be given liberty today."

Private (in rear rank): "Give me liberty or give me death."

Officer (sharply): "Who said that?"

Private: "Patrick Henry."

She—Wouldn't it be better if we didn't go out for supper? I think it's going to rain.

He—Yes, I think so, too, I can tell by the change in my pocket.

"Can you drive with one hand?" asked the girl in a gentle voice.

"You bet I can," replied the young man eagerly.

"Then have an apple," answered the sophisticated young creature."

She—Harold is developing into a regular lady-killer.

He (absently)—I wish you'd introduce him to your mother!

"Last night at two o'clock in the marnin'," said the Irishman, "whin I was walkin' up and down the flure wid me bare feet on the oil cloth, wid a cryin' child on aich arm, I couldn't help but remember that me father wanted me to be a priest but I thought I knew better than he did."

NEWS FROM THE OIL FIELD MAY BE VERY MISLEADING
CAN'T YOU FIND NUTHIN IN THIS TOWN
NOT A DROP!
JUST OUR LUCK-ANOTHER DRY HOLE
I'VE HAD A VERY HARD DAYS DRILLING TODAY
I WOULDN'T SELL IT BUT I NEED THE CASH
SOLD
I HAVE A PERFECT SPECIMEN OF GYP ROCK—PS.—I WAS SURPRISED THAT I DIDN'T RECOGNIZE IT WHEN I FIRST SAW IT
BOSS-I BEEN FISHIN' AND CAUGHT ONE THIS BIG-BUT HE GOT AWAY
FIX THEM TIRES
I SENT A BOOB TO TOWN FOR A BIT AND HE CAME BACK WITH A FISH-TAIL
SINCT THE POTES HAS STARTED RITIN ABOUT HOW CUM OIL NOW THE PITCHER DRAWERS IS THINKIN THEY CAN GIT FUNNY
I STRUCK A DOME YESTERDAY AND NOW HAVE A VERY GOOD PUMPER
MY STRENGTH IS INCREASING. I LIFTED A 6 INCH CASING BY MYSELF
HISSELF

"4 Jacks" that are "Aces" in every oil field

Templeton, Kenly & Co., Ltd.
Sole Mfrs.
Chicago, Illinois

Simplex Jacks

At Your Supply House

Hydraulic Motor Attains Remarkable Speed

(Continued from page 236.)

necessary to start the motor under a light load, then apply the heavy load after the rotor had reached a good speed.

Avg. water pressure.	Rev. per minute.	Brake horsepower.
54	1500	.07
	2200	.128
	2400	.112
	2700	.126
	3000	.142
120	3000	.244
150	3000	.304
	2800	.318

More information will be supplied by W. P. Denny, 7106 Avenue E, Houston, Texas.

Pin That Will Not Jump Feature of New Bit

This week the Bridgeport Machine Company, Wichita, Kansas, announces a drilling bit with a guaranteed pin. It is claimed that this pin will not "jump."

This bit pin is made from a metal with unusual strength, elasticity and hardness.

Bridgeport has been testing this Hychrome drilling bit throughout the Mid-Continent field and the Rocky Mountain district for over a year and the bit has been given the usual severe field treatment.

Each set of the bits is sold with a written guarantee that if the pin of the bit "jumps off," "pulls off," or "breaks off," the bit will be replaced.

More detailed information may be had by writing the company.

The Geology and Oil Fields of Archer County, Texas

(Continued from page 178.)

ficiently general estimate to include all conditions.

Costs for 1600-Foot Hole

Contract price at $3 per ft.	$ 4,800
Day work (completing well, running tubing, etc.).	300
Fuel 20 days	1,200
Water 20 days	300
Derrick	675
Casing 1600-ft. 6⅝-in.	2,400
Incidentals (slush pit, water pumper, etc.)	325
Total	$10,000

Cost for 1000-Foot Hole

Contract price at $3 per ft.	$ 3,000
Day work	300
Fuel 12 days	720
Water 12 days	180
Derrick	675
Casing, 1000 ft. 6⅝-in.	1,500
Incidentals	325
Total	$6,700

(For dry hole deduct casing costs).

Possibilities for Deep Production

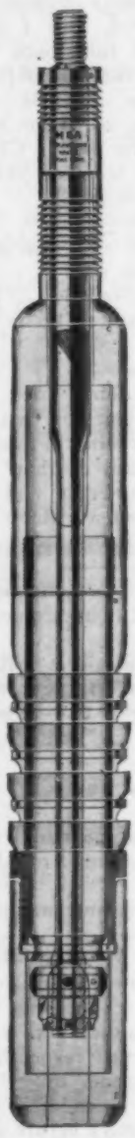
The past few years have seen a de-

And Now The

H & A Traveling Valve

"Valve Cup Type"

An improved reciprocating piston type *Traveling Valve* for use in Standard Working Barrels that insures a positive opening and closing of the working valve in pumping, making the unit particularly adaptable for use in wells where loadstone, paraffin or unusual lifting conditions exist.



The *H & A Traveling Valve* being of a positive action type, the opening and closing of the valve is directly controlled by the jack or beam motion of the sucker rods, which construction eliminates the possibility of the Working Valves fouling as they are completely flushed on each down stroke.

The volume lift capacity is controlled by a regulation of the *Valve Stroke Adjusting Collars* on the *Swivel Valve Stem*, which permits a better handling of the individual problems in the well where installed.

All *H & A Traveling Valves* have Annular Grooved Fishing Necks and the *Cages* and *Valve Body* machined with oversize openings to handle more production.

This *Valve* is sold on a guarantee to simplify your Working Valve Pumping problems, with buyers reporting that its use not only has increased production lifted but materially reduced pulling and replacement expense. There are also 4" *H & A Traveling Valves* in service that are lifting more fluid than was raised by straight time swabbing in 6⅝" casing and at a considerable saving in both labor and equipment.

"Better Investigate."

Have you seen the SPIVEY SAND TRAP with the Adjustable volume capacity Reservoir?

It also triples the fluid intake through the standing Valve.

Leonard AJAX Giant Box Sucker Rod Sockets

Distributed By ALL SUPPLY STORES

Baird Tool Works
MANUFACTURERS
Tulsa, Oklahoma, U.S.A.

stop sucker rod BREAKAGE

THE tremendous losses heretofore incurred by rod breakage can be reduced to a minimum through the use of Sheffield Sucker Rods. The special analysis steel from which Sheffield Sucker Rods are manufactured coupled with the Sheffield Perfected Joint has given to Oil Producers a Rod that has indeed made an enviable record for dependability and economy in service.

SHEFFIELD SUCKER RODS

Sheffield Sucker Rods may be secured from all stores of the Bovaird Supply Company and the International Supply Company or direct from Kansas City. Made in three sizes: ¾", ⅞", and ⅞" in both Box and Pin and Double Pin Types.

SHEFFIELD STEEL CORPORATION

(KANSAS CITY BOLT & NUT CO.)

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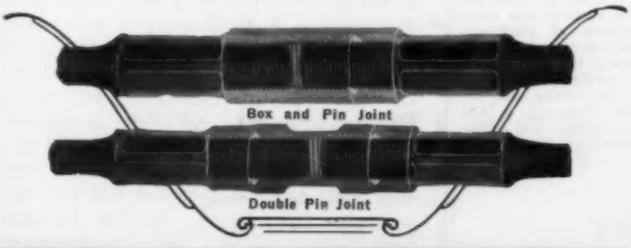
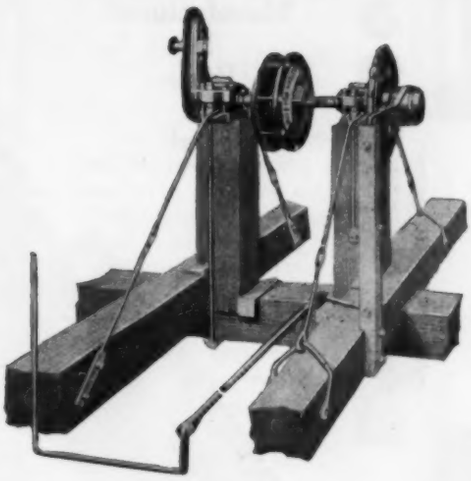
We manufacture New Billet Reinforcing Bars, Rail Steel Reinforcing Bars, Blue Annealed Sheets, Merchant Steel Bars, Merchant Iron Bars, Bolt and Nut Products, Sucker Rods, Pull Rods, Track Spikes, Forgings.



Ideal Rig Irons



Ideal Rig Irons result from years of oil field specialty manufacturing. We are constantly in touch with the production departments of the largest companies and their requirements. Thus Ideal Rig Irons are produced to specifications laid down by the A. P. I.

Oil Field and Refinery Equipment

We make a specialty of manufacturing and marketing special oil field and refinery machinery of proven worth. Our list of manufactured oil field specialties includes: Ideal Rig Irons, Brownie Sucker Rod Sockets, Counter Shafts, Sand Reels, Boiler Cleaners, Dome Covers, Outlet Caps, and other special machinery. Also a full line of steel bars and shafting. Write for prices.

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The essential portion of the petroleum industry, that of bringing the petroleum to the surface, is accomplished by the men in the field, whose work is greatly facilitated by the application of pertinent technical data. It was for the purpose of offering this data in practical form that this book was written. This book presents in clear terms the relation between the basic theories and laws of geology and those of petroleum geology, and their application in the occurrence and extraction of petroleum from its natural reservoirs, through to the econmoic phase of the industry; together with many tables and alignment charts which are applicable to petroleum engineering.

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velopment of deeper horizons in many of the older fields of the Mid-Continent where the original producing beds have been drilled up. Since the first important development began, the shallow sands of Archer County have demanded all of the attention of the operators, but with the depletion of these pools more attention will be turned to the development of deeper zones that are thought to exist. As yet, only a few scattered tests have been drilled below the base of the Cisco and of these none can be said to be in a well-selected area. With formations that produce elsewhere known to exist under Archer County, it will only be a matter of time and proper encouragement of operators by general conditions, until these beds will be tested, and there is every reason to believe that important production will be developed from them.

Of the total oil produced to date in Northern Texas, Cisco formations have produced roughly 53 per cent, Bend 43 per cent, and Strawn 4 per cent. Although the Cisco formation has produced more than half of the oil recovered, deeper formations will furnish reserves when the Cisco horizons have been depleted. Furthermore, it is possible that more prolific production will be developed from relatively unimportant horizons or from beds not now producing.

Strawn

The Strawn group merits a position of first importance in any consideration of deeper possibilities. Although it does not rank as a producer with the Cisco or Bend, its petroliferous facies are of the greatest extent and it is a productive series that covers a wider territory than any other division of the Carboniferous. The producing horizons within the Strawn maintain a marked persistence in interval below the top of the formation. The first important sand comes a little more than 100 feet below the Palo Pinto limestone (basal Canyon) (Fig. 6). This horizon, the Turkey Creek sandstone, has produced oil and gas in the Ibex and Moran fields of Shackelford County. Showings were also recorded from this horizon in the Bashara well in western Young County. In the Bunger and South Bend fields of southern Young County, the 1900 and 2100-foot sands come 800 and 1000 feet respectively below the Palo Pinto. Small production has been developed in a sand 875 feet below the base of the Palo Pinto in the Bashara Morgan well of western Young County. This latter horizon has produced in the Holleman field and on the Scott lease in the Olden Shallow field. Here it is called the Scott sand and occurs 830 feet below the Palo Pinto. In the Humble Stubblefield well of southeastern Throckmorton County, the sands at

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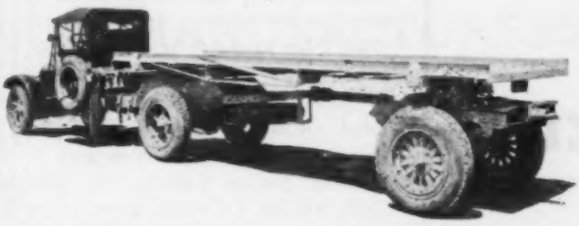


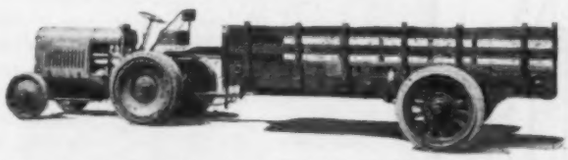
The above illustration shows a Feigelson 4 ton Trailer with 2½ ton truck, making 6 ton equipment.

Feigelson Trailers are extremely flexible and are adapted to any make of Truck or Tractor.

Motor Truck high speed trailers are built in 2 to 10 ton size, in two and four wheeler types.

For extraordinary heavy hauling, Feigelson 8 wheel trailers are made for crawler type tractors (Caterpillar) used for loads ranging from 10 to 50 tons.

For light hauling using International McCormick Industrial Tractor, two wheel trailers are made for loads ranging from 3½ to 10 ton.



The above illustration shows a Feigelson 10 ton trailer with tractor, making 10 ton equipment.

Although Feigelson Trailers are not yet many years old, they have proven themselves so thoroughly they can now be found in most every corner of the globe. London, England, Canada, Mexico and most every State in the U. S. A. you will see Feigelson Trailers performing with absolute efficiency. The Gulf Co. have now standardized on the Feigelson 4 ton Trailer.

Send us your orders—specify what type Truck Trailer is to be used with.

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ALEX FEIGELSON

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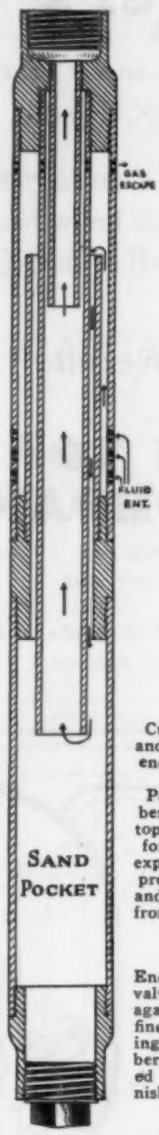
M. & K. SAND AND GAS TRAP

The M. & K. Pump Specialties are producing a revolution in pumping oil wells. They have proven so efficient, reliable and saved many thousands of dollars to those who have used them that our claims are now fully and cheerfully acknowledged by everyone familiar with their performance.

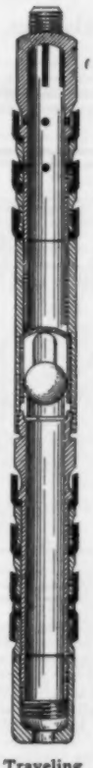


Sand and Gas Trap

Cups above and below an enclosed ball valve Perforations beneath two top cups afford inside expansion and prevent sand and sediment from accumulating

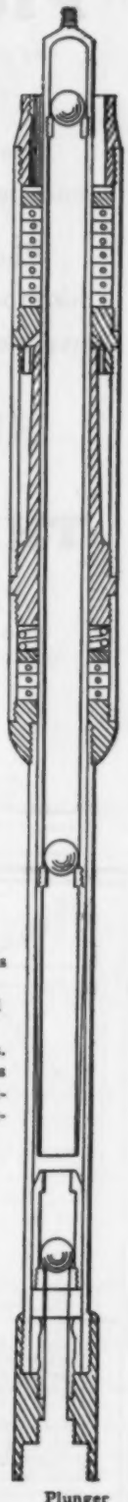
Enclosed ball valve protects against paraffine and stuffing box rubbers. Reversed ring is furnished.

The M. & K. Sand and Gas Trap separates and traps the sand or gas from the fluid before its entrance into the pump. Constructed in any desired length



Traveling Valve

This Pump is especially recommended for sandy, water or b. s. wells and has proven successful wherever used



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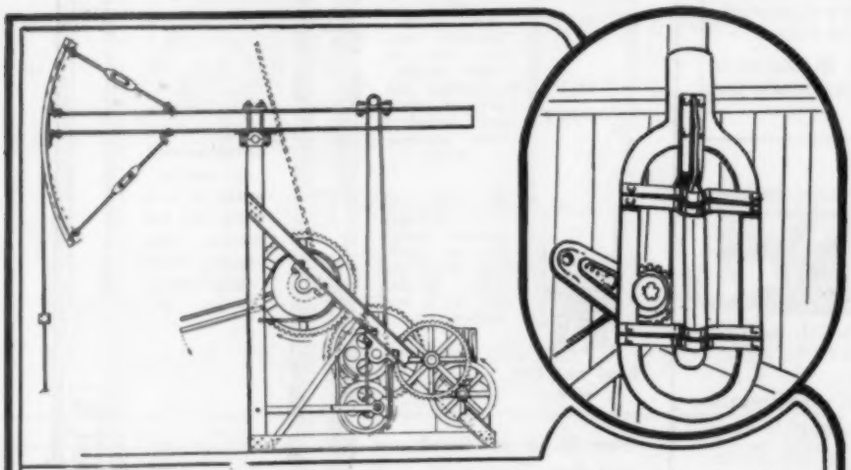

The Reschke Geared Long-Stroke Pumper in the circle above and the Reschke Unit Pumping Plant in the upper left are two outstanding products of this company that are now in use throughout the oil country. Some of the largest companies in the field have adopted them as standard equipment.

The Reschke Unit Pumping Plant is built for use in shallow and light wells up to 2500 feet in depth. Eccentric gears are heavily shrouded to carry load and give direct 30-inch stroke while any length up to 5 feet may be obtained. Adjustable paralleling device assures straight lift on rods. This Pumping Unit will satisfactorily pump a 2,000-foot well with a 6 H. P. engine and have ample reserve power. For larger capacities we can furnish 8 H. P. or 10 H. P. engines or electric motors as desired.

The Reschke Geared Long-Stroke Pumper gives a 72-inch stroke that virtually eliminates the sudden stop and start on the rods. Easily attached directly to the crank and can be pushed out of the way when pulling tubing or rods. Imparts a slow, steady up-and-down motion.

Live sales representatives in the active areas are wanted. Communicate with us direct, stating experience and what territory most familiar with.

Manufactured by

The Reschke Machine Works Co.

Mfrs. of Oil Well and Farm Machinery and Supplies.

Wichita, Kansas.

639 and 865 feet below the Palo Pinto have carried good showings.

With these widespread showings in well-defined horizons, it does not seem unreasonable to expect that when the search for deeper oil is carried to the Strawn in Archer County, important production will result.

Canyon

Although the Canyon group is predominantly a lime and shale formation and at first thought could not likely be considered a potential producing formation, it is not without distinct possibilities. Both well logs and surface outcrops indicate a change in character of the sediments northward and northeastward and apparently some of the massive lime groups are completely replaced by sand. For this reason it is entirely possible that at some point these sands will carry oil. At several localities in Brown County, shallow oil is present in the Canyon and in one well in Archer County, the Dee and Bellport No. 1 Cowan, a gas show was recorded from a sand at 2800 feet. As near as it can be correlated, this sand would fall near the base of the Canyon. With the Canyon beds as with other formations which do not crop out in Archer County, definite information as to character and extent is lacking but with such a thickness of beds within reasonable drilling depth, the Canyon offers a distinct possibility for the future.

Marble Falls

Big lime production in Archer County based on recent costs and values of crude would be unprofitable. The top of the Marble Falls should normally lie at depths of 5000 feet in southeastern Archer to 6000 feet along the Wichita line. The Silk well, however, ten miles north of the southeast corner of the county, was drilled to 5005 feet without penetrating the Marble Falls but was supposedly in the top Bend when abandoned. It would, therefore, either be low on the east flank of the Bend Arch or represent a thickening of the lower Strawn and possibly Smithwick northward from central Young County. We are inclined to the former view though no other deep wells have been drilled in the county to establish either theory. It is probable that the Marble Falls limestone or its equivalent underlies the entire county though no direct proof is available.

Smithwick

The producing horizon at Breckenridge and vicinity, the "gray lime," is recognized as a lime horizon in the Smithwick shale about 300 feet above the Marble Falls. The same analysis as the one suggested for the Marble Falls would apply except for the somewhat lower depth. Production of some sort could be expected but only at a loss under present economic conditions.

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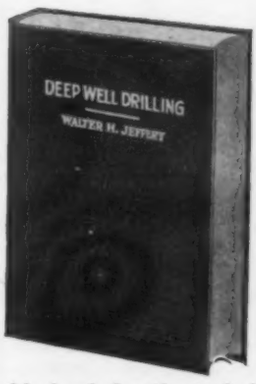

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Panhandle Operators Large Users of Nitro-Glycerine

(Continued From Page 144.)

enough were seeing the prospect of a waste of the state's petroleum resources by hasty and frenzied shooting.

A most casual inspection of not a few of the older wells in the fields is evidence enough that much oil has been allowed to spout out and was left uncaught.

All of this is probably beside the point, which is, what is the ultimate effect of the shooting now being practiced in the Panhandle field?

Swabbing

Some operators who see another side to shooting try the swab as a means of "opening" up the pay formations. Sometimes the swab is used after a light shot and sometimes without the aid of a shot of any kind.

There is a case on record of a well which failed to develop a natural flow when drilled into the granite wash pay and which was started on a big natural flow by continued swabbing. This particular well was swabbed for more than 24 hours with but an indifferent production. Swabbing was continued, however, and a natural flow finally started. During the first month after completion, the well made slightly less than 20,000 barrels natural, and by the occasional use of the swab is holding up to that figure, although it is now almost three months old.

Varying opinions are held by operators as to the effect of the large shots on the size of the hole and the exposed surface of the pay formations. Some hold that such shots can invariably be expected to burn the sand and are to be avoided where possible.

In a general way it might be said that the Panhandle field has no water problem. Water is found at, or near, sea level and the hydrostatic pressure is almost nil.

Not a few of the wells that are bottomed at what would seem to be a safe distance from sea level, however, are showing rather large amounts of water with the oil.

It is interesting, and probably significant, to note in this connection that most of the wells making water now were given these large shots.

Shot Brings Water

A case in point is the Pattison-Lenix Oil Company's Smith No. 1. This well showed for a small producer when drilled into the sandy lime pay at 2910-95 feet. It was shot with 505 quarts of nitro and responded with a flow of some 5800 barrels during the first 24 hours after the shot.

The practice of using large shots in the Panhandle field is reported to have been inaugurated by the operators of the Smith well.

In any event, the Smith well is now making water and all efforts to rectify matters have apparently been futile.

Just to the southeast of this well, the Dixon Creek Oil Company has a diagonal offset. The Dixon well was never shot and is a big producer. Water has never appeared in this well as in the northwest offset Smith well which was shot with 505 quarts.

The rather early showing of water in the Smith well and the other big wells which were given large shots will apparently act to discourage operators in the Panhandle field from using maximum sized shots in their future wells.

Considering the depth of the pay formation in the average well in the Panhandle field, anything more than 300 quarts of nitro might very well be considered as heavy.

What the characteristics and conditions of the pay formations are, it is not well known as yet. It is well to assume, however, that extremely large shots do more harm than good, if one is to judge by ultimate results.

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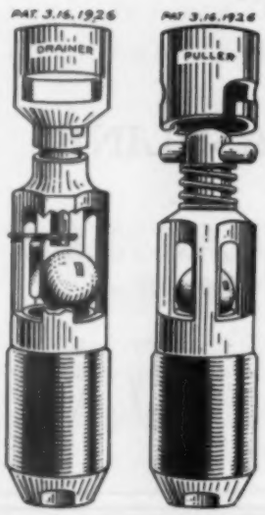

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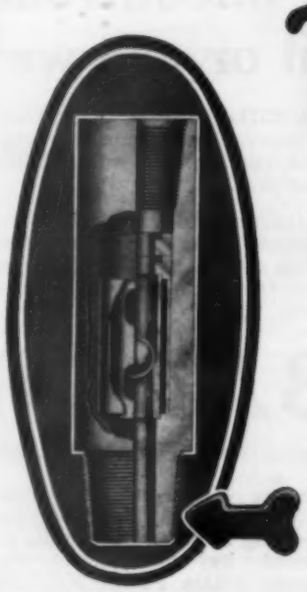

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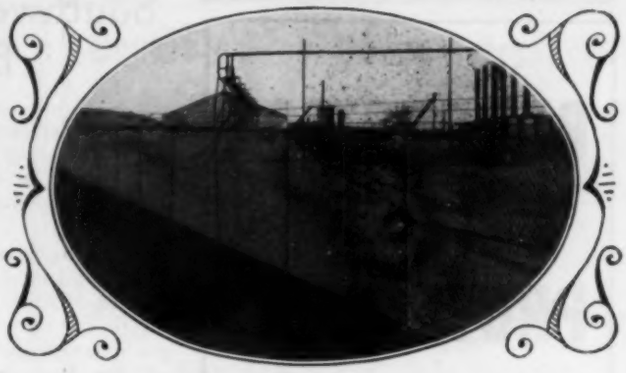

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Southwest Texas Development Retarded By Lack of Transportation

(Continued From Page 120.)

rence of petroleum in this region. It is believed that the presence of silica is evidence of fissuring and faulting, probably accompanied by folding; that silica-charged waters have found passage through fault fissures and smaller cracks and have deposited silica in the various forms in which it is found wherever the proper conditions for precipitation existed; that the position of the Reynosa escarpment tends to remain fixed by the resulting indurated rocks along the faults and fissures; and that the accumulation of petroleum in this area has been chiefly controlled by faulting (and attendant folding) which supplied channels for the circulation of petroleum as well as silica-charged waters.

"The fields along the escarpment have a marked similarity and display similar pecularities. . . . Production stops abruptly on the west. Gas is usually found on the western edge of the fields and oil to the east. Such conditions suggest that the same agencies, producting analogous structural conditions, have been at work in various localities, and that the structure thus produced is faulting with sufficient folding to form suitable reservoirs."

Gravity of Oil

Gravity of the oil produced is the same in all the fields, with two exceptions. Carolina-Texas is producing a 34.2 gravity crude, and Magnolia Petroleum Company has one lease in the Schott pool that produces a 44 gravity crude with very high gasoline content. Production from this lease is small, however. All the rest of the oil is about 22 gravity.

Analysis of Mirando crude shows flash at 210, fire at 230 F., viscosity 81-100, cold test 0, free sulphur 0.120 per cent, and b.s. and water 0.1 per cent. Content of the crude shows 27 per cent; bottoms 10 per cent; slop 2 per cent, and gas oils 61 per cent.

Carolina-Texas crude is high in kerosene.

The following pipe lines serve the fields: Humble Oil and Refining Company has a 4-inch line, formerly belonging to Associated Oil Company, through the Mirando Valley and Henne-Winch-Fariss fields. Also the Humble has a 4-inch line from the Randado to the Henne-Winch-Fariss field and a 6-inch line from the main field gathering station in the Henne-Winch-Fariss field to the tank farm at Bruni. At this tank farm Humble has two 55,000 barrel tanks completed, proposes to build six, and has room for eight.

Humble's 8-inch line from the deep-water wharf at Ingleside on the Corpus Christi Bay is to connect with the Bruni tank farm. This line is now more than than half completed and present plans are to be running oil by the first of September. There is to be a main pumping station at Bruni.

Magnolia Petroleum Company has a 4-inch line from its tank farm at Mirando City to the Henne-Winch-Fariss field and this line is now being paralleled. Also the Magnolia is surveying the route for its long line from Luling to Mirando City and plans to begin active laying of the line as soon as possible. This will connect the Mirando City tank farm, where Magnolia has about 20 55,000-barrel tanks and a small topping plant with the refinery at Beaumont.

Houston Oil Company has a tank farm near Bruni, with two 55,000-barrel tanks now up, and also a loading rack. This company operates a 6-inch line from the Cole field to the tank farm.

Texpata Pipe Line Company has two parallel 4-inch lines from its refinery at Mirando City through the Aviator, Mirando and Henne-Winch-Fariss fields.

Randado Pipe Line Company has a four-inch line from the Randado pool to the Henne-Winch-Fariss pool.

With the recent completion of the Humble's 4-inch line from the Carolina-Texas field to Bruni, every field in the district has pipe line facilities, and is soon to have two outlets to deep water.

Better Market

All operators in the Laredo section are sanguine in their belief that these lines will mean a better price for Mirando crude than has heretofore been paid, and will be the direct cause of widespread development in the district. This view is undoubtedly warranted. The companies building the lines do not have production to fill them and there will certainly be much keener competition for oil.

Low-priced oil has been a great handicap to the district up to this time. One independent operator who has built up a reputable company recently sold his Laredo properties because he claimed he could not operate them with a profit. He declared that after everything had been closed, he would have been $1000 in debt on the deal if the property had been given him to begin with. Not all operators have fared so badly, but none of them have made profits that would ordinarily be realized from production the character of that in the district with transportation facilities.

Drilling Easy

Costs of completing wells in the Laredo section range around $8000. Drilling is comparatively easy. The ro-

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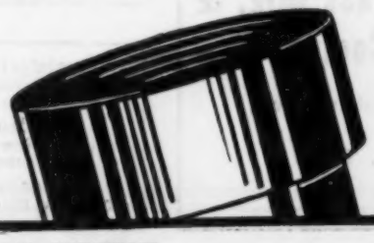


tary system is used altogether and no rock bits are necessary.

The biggest problem connected with the actual operation of drilling is water. The region is arid and there is very little surface water. Such as there is is generally in a tank on the ranches and can not be utilized for drilling. In most of the fields wells have to be drilled. These are generally operated by water companies that supply the oil companies.

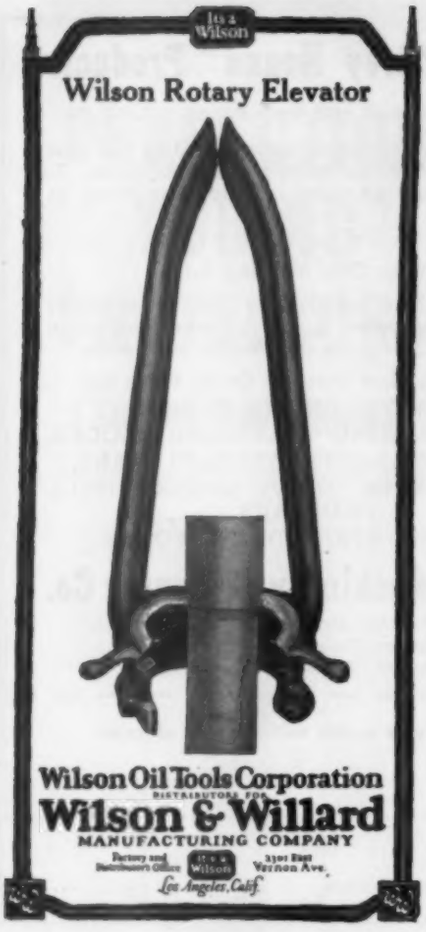
Most of the oil produced in the old fields has to be treated. It is not badly cut or emulsified, however, and will settle out in most instances. Tret-O-Lite is used with steam.

Individual gasoline pumping outfits are used quite generally to pump the wells from the time they are completed until powers can be built. On a few leases the gasoline engines are the only power provided.

Nearly all the wells are swabbed at first to clean the sands. If this is done there is little trouble with sanding up, but if swabbing is not done a good deal of sand trouble generally results.

There are only two refineries in the district. The Misko Refineries, operated by O. W. Killam at Mirando City, make lubricating oil. This plant has a capacity of about 1000 barrels. The Texas-Mexican plant in Laredo can use about 300 barrels of crude daily. Both these plants have been operating at capacity since they were built.

Aside from the oil fields, there are two gas fields that ought to be mentioned: The old Reiser gas area, about 10 miles west of Mirando City, and the Jennings gas field, in Zapata County. The Reiser field is the oldest in the entire district and has about spent itself. At Jennings, however, there are a number of good gas wells. The Cole field and the Carolina-Texas area are also big gas fields with many wells of enormous yield.



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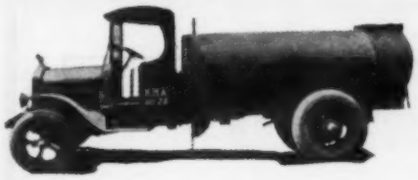

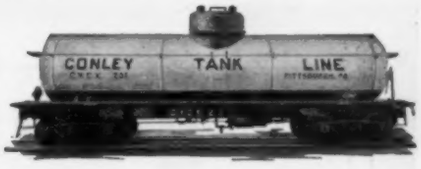

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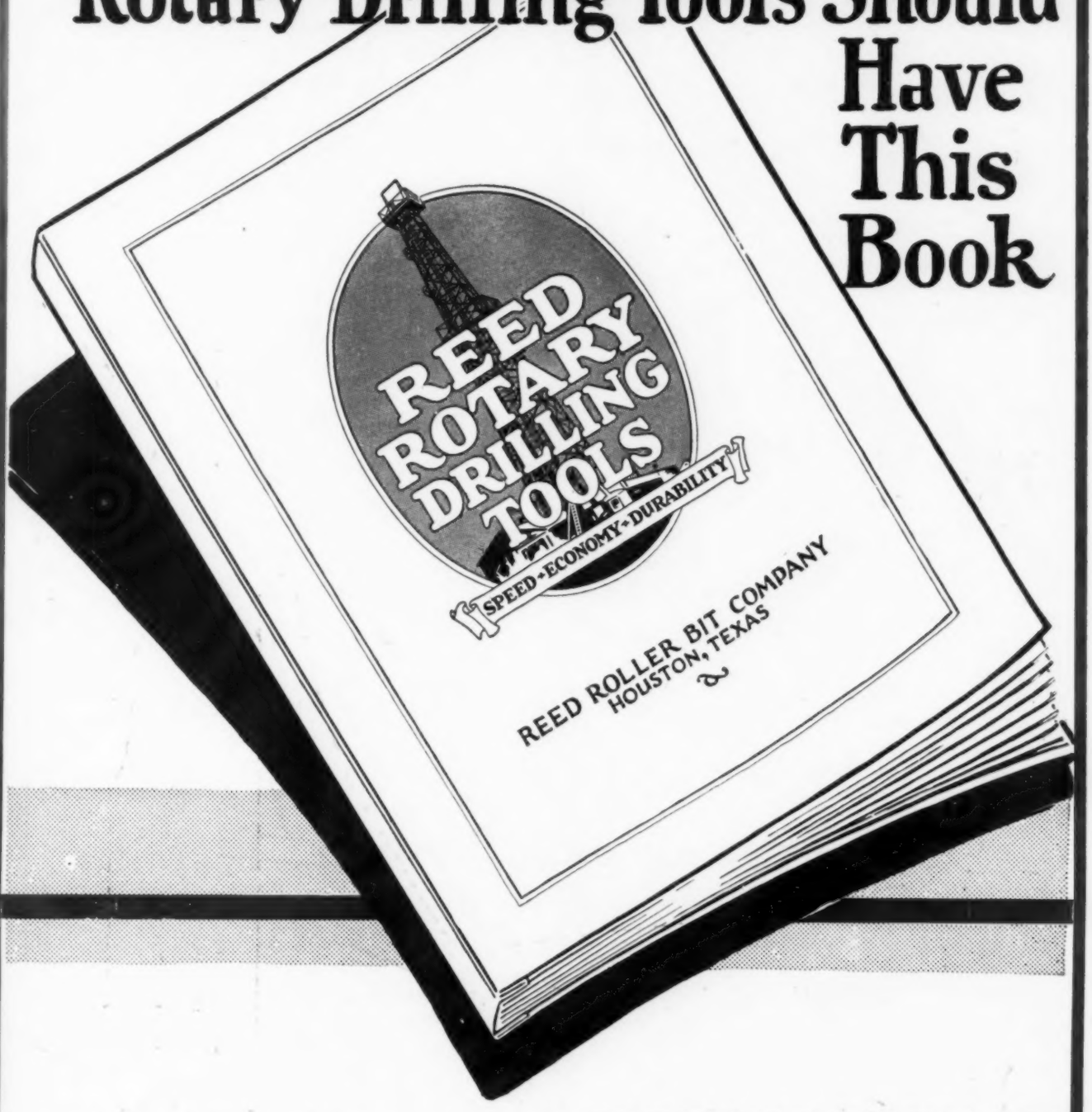

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